MONITORING AND EVALUATION OF ECONOMIC RESTRUCTURING: THE CASE OF VERACRUZ, MEXICO.

By

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by

Rey Acosta

This dissertation is dedicated to my parents, Adolfo Acosta and Camila Barradas, to my wife, Micaela Sanchez, and to my children, Marco Antonio y Vania Elizabeth.

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This study examines the economy of the state of Veracruz in Mexico. Veracruz is considered an important state in Mexico given its contribution to the country's economy, its natural resource endowments, its maritime port capacity, and its strategic location in the Gulf of Mexico. In recent years, the state has been undergoing a significant economic restructuring process in response to an opening of the economy. As a result, significant structural change has been occurring in all the sectors of its economy. Documentation and evaluation of these changes is necessary for improved formulation of state and regional development strategies for Veracruz. Structural change demands a new and high quality information base and information system to adequately monitor the changing process through time. The study includes a definition of the process of globalization of the economy and how Mexico is affected by this process; a discussion of NAFTA and its implications for

Mexico; the changes in the Mexican economy from 1940 to the present, focusing on the structural change process as Mexico moved from an import-substitution development strategy toward an export-oriented strategy; a geographic and socio-demographic delineation and an economic profile of the state of Veracruz; the role of the government within the context of the export oriented economic strategy; and the role of economic analysis in policy-making. A conceptual framework to support data collection and analysis is developed.

The incorporation of Veracruz's economy into the world market has generated increasing amounts of information. Data collection, development of the statistical processing system, and economic analysis of this volume of information, however, are lagging with respect to the economic reality. As a result, uncertainty about the immediate future of the local economy is prevalent in the Veracruz's society.

CHAPTER 1
INTRODUCTION

The dynamics of the world economy during the last 20 years can be described by the term "globalization." There is no country around the world where this word has not been mentioned in economic and political circles. Rich or poor, developed or developing, all countries regardless of economic status are experiencing restructuring in their economies as a result of this new economic trend. Major changes have affected the operations of the international capital markets, the location of productive activities, the role of transnational companies, the ways in which business enterprises operate, and the functioning of labor markets (Gilbert, 1997).

Globalization is a process that forces a great deal of economic restructuring in the countries involved. In most cases, this economic restructuring process represents real structural change given the reorganization and readaptation of the economic, political, social and cultural institutions that foster economic development and will help to make national and local economies more competitive in the international arena. Mexico has put in motion, since the early 1980s, a set of macroeconomic, microeconomic, and institutional policies, in order to stimulate economic growth. A new economic model supported in the external sector has been introduced. This new model is commonly known as neoliberalism. At this moment, Mexico has already walked under the umbrella of neoliberalism for about 15 years

and there is still no consensus about the real benefits (if any) of globalization. Two severe economic crises have struck the Mexican economy during this period (1988 and 1994), leaving on its step instability and economic uncertainty. This situation has made Mexicans skeptical about neoliberalism as a way to reach higher levels of economic development. Nevertheless, the Mexican government maintains a course of deregulation and encouragement of foreign investment. It considers that Mexico is still in the middle of the transition and that it is too early to make conclusions regarding its impacts.

Veracruz, historically a rural state dependent on agriculture, is also on the road to globalization. During its short experience applying neoliberal policies, the state has seen economic crises affect all its basic production sectors. Stress has been motivated by external forces such as the decline of international prices of important commodities including coffee, citrus, sugar cane, and cattle, among others, coupled with the impact that the economic restructuring process is causing on the entire economy. As a consequence, the migration of the rural population to urban areas has grown significantly. For the first time in history, the state of Veracruz has become a net exporter of labor to other states and other countries. The urbanization of the state's population brings an endless set of social, political, cultural and economic problems. The real magnitude of the social drama in Veracruz is unknown due to the lack of basic information to access the changes underway. The aim of this research is to explore economic trends of the economy of Veracruz in recent years, as well as to introduce a conceptual framework which will allow the state's leaders to monitor, document and evaluate the impacts of changes in the Mexican economy and resulting implications for Veracruz.

Problematic Situation

The Experience of Mexican Economic Globalization

From the mid-1950s to the early 1970s, Mexico was an economically stable country with high growth and relatively low inflation. Furthermore, the sharp increase in oil prices in 1973-4 generated significant additional export revenues for the Mexican government from the state-owned oil industry, revenues that allowed the government to adopt expansionary macroeconomic policies. In the intermediate run these policies were responsible for large fiscal deficits, generating large capital inflows and an overvalued currency. In addition, Mexico retained restrictive trade policies that limited import and export growth. This strategy was known as "import substitution industrialization" (ISI), and it focused on creating development by encouraging the production of those commonly imported industrial products, as well as restricting their imports (Cardoso and Helwege, 1993).

By the early 1980s world economic conditions and perceptions in international capital markets changed significantly. World interest rates rose and international oil prices fell bringing, as a consequence, the flight of capital from Mexico to foreign markets. This quickly turned into a foreign exchange run from Mexico and resulted in a significant economic crisis. In August 1982 the Mexican government announced that it could not meet scheduled debt payments and a devaluation of Mexican currency was inevitable. Mexico entered what was to become one of the darkest periods of its contemporary history. Inflation

was out of control, interest rates skyrocketed, and gross domestic product (GDP) reached negative growth rates. This period (1982-1989), known as the "lost decade," represented the failure of the ISI.

In order to surpass the crisis Mexico adopted a new strategy where markets, not states, were viewed as the engines of growth. In this sense, since 1988, a broad process of economic restructuring and growing specialization in productive sectors that are more competitive in international markets has been underway. Reforms are intended to achieve higher levels of production and productivity, to open the countryside to domestic and foreign private investment, to orient the agricultural apparatus towards more open and competitive markets, to raise income and welfare levels in rural society, and to reduce the intervention by state agencies in rural development (Moguel and Bartra, 1995; Gutierrez, 1995).

This new economic development strategy was known as Export-Oriented Industrialization (EOI) with its most salient features being just the opposite of those of ISI. The economy was opened to foreign competition by means of substituting tariffs for import permits, reducing tariffs and making them more uniform, eliminating official prices and simplifying the regulatory framework applicable to foreign trade transactions, and supporting a major participation in regional free trade agreements such as the North America Free Trade Agreement (NAFTA), and the Group of the Three (Morley, 1995; Bradford, 1994)..

Under this new economic strategy and following economic policies of strict fiscal restraint, pegged exchange rates, and a strong anti-inflationary commitment, the Mexican economy began to grow again in the early 1990s. Exports boomed while imports grew even faster, and international capital returned to Mexico. The strategy appeared to be working.

Inflation fell continuously, large fiscal deficits were eliminated, and GDP growth recovered from an annual average of zero over 1982-1988 to about 4 percent from 1989 to mid-1991. However, when the economic scenario appeared more optimistic for the Mexican economy, a major economic crisis struck again in December 1994. The growth rate in GDP reached negative numbers (-7 percent in 1995), and the Mexican currency was devaluated drastically (Whitt, 1996; Espinosa and Russell, 1996).

The Mexican government responded to the new crisis with an economic program supported by a large international financial assistance package. The response aimed at stabilizing the economy, restoring international confidence, and creating conditions for sustainable economic growth (World Bank, 1997). Since then, Mexico has made substantial progress on adjustments; GDP is growing once again and the economy is showing some signs of stability. The government has also made progress on its structural reform agenda. This both a defense of past liberalization and forging ahead with the unfinished business of privatization, deregulation and labor-market reform. In this sense, the "market model" seems to have survived the 1995 crisis. In recent years foreign investment flows have improved. The Mexican government continues to emphasize a commitment to increase direct foreign investment by new privatization and property ownership laws. Internally, major social security reform legislation has been implemented. Under this program, in 1996 real GDP grew at a rate of 5.1 percent, while in 1997, it grew even faster at an annual rate of 7.1 percent. In the second half of 1998, however, the financial crisis occurring in the international stock markets is causing negative impacts on the still unstable Mexican

economy. The currency is devaluating and the shadow of a new economic crisis is surrounding Mexico.

Regional Adjustment

Consolidation of the economic and political changes in Mexico in recent years could provide an historic opportunity to move towards a more developed economy. However, some considerations are deserving of analysis before assuming that potential development will become a reality.

First, changes in the relationship among regions of the national territory have occurred as a result of globalization processes. Hiernaux (1995) summarizes some of these changes for the particular case of Mexico (1) a massive migration from rural areas to large cities has been generated. This phenomenon will modify the structure, hierarchies, levels, and relationships, of the cities. Some cities, particularly those more fully integrated into the international economy, will show a great capacity for demographic and economic growth and for the modernization of their physical structures (Monterrey in the state of Nuevo Leon is a good example). In other cases, like Mexico City, this capacity will be much less limited. Right now the high concentration of population in this city has resulted in deteriorating living conditions. (2) The regional transformation motivated by globalization has been occurring relatively quickly, a situation that challenges the stability of regions through time.[1] The speed of these territorial changes, indicated by out-migration from rural areas, usually

[1]Some demographic projections from the 1980s and 1990s claimed that Mexico City's population would be more than 30 million inhabitants by the year 2000.

surpasses the capability of urban regions to assimilate increasing migration inflows. It is common to observe deficits in basic urban services supply such as infrastructure, education, and social security. (3) As the relationships between cities and regions are redefined, new infrastructure is needed to transport not only merchandise and people but also information. As the telecommunications revolution and the information age reach, urban concentration will be less important for firms as a factor of production. What emerges as a key factor in the new economic development paradigm is a redefinition of the connection between cities and regions.[2] (4) Not all localities and regions have the same capability for economic development.[3] In this sense, one must assume that new forms of regional disequilibrium will appear in scenarios affecting both cities and regions.

Finally, countries, regions and localities face two imperatives in a capitalist world, job creation and the ability to develop the economy. In this sense, economic development should be a goal perfectly synchronized, at all levels, with a set of economic policies

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[2]During the last years, the question of connection has been central in the Mexican economic policy. A new expressway program has been proposed under concession; ports have been privatized; a new port and harbor law and port administration system is under study; and the Mexican Telephone Company has been restructured and privatized.

[3]Porter (1990) defines four broad attributes of a nation that shape the environment in which local firms compete that promote or impede the creation of competitive advantages: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry. In this sense, structural transformation has a major influence on the generation of competitive advantages, however, it is something that does not occurautomatically. As Porter says, the "diamond" (as he called the interaction of the determinants as a system) is a mutually reinforcing system. The effect of one is a contingent determinant on the state of the others. Favorable demand conditions, for example, will not lead to competitive advantages unless the state of rivalry is sufficient to cause firms to respond to them. Advantages in one determinant can also create or upgrade advantages in others.

designed to reach this goal but taking into account regional differences. The key question is how national specificities and regional diversity work together to affect the ways in which the global process becomes internalized in societies. In Mexico's case, country-level analysis is made more complex by its vast regional heterogeneity, not only geographical and physical but social and cultural as well. Regional economic growth is a complex process which, despite similarities or diversities between regions, is locally specific.

The State of Veracruz, Mexico

While the North American Free Trade Agreement (NAFTA) has brought a great deal of attention to the land border between Mexico and the United States, the Gulf border (defined by the Gulf of Mexico) is no less important to the country's global expectations. Recently, the Gulf Governors' Accord brought together the 11 states that share the Gulf of Mexico (Alabama, Florida, Louisiana, Mississippi, and Texas in the United States, and Quintana Roo, Yucatán, Campeche, Tabasco, Veracruz and Tamaulipas in Mexico) in order to foster deeper interaction and cooperation among the Gulf states. The interest areas included in the agenda were investment, tourism, agriculture and fishing, health and environment, education and culture, infrastructure and communication, and finance, trade and investment (Zaretske and Rosenberg, 1998). Participants in this accord believe that changes in the Gulf region brought on by NAFTA and the globalization process in general will create opportunities for greater trade, investment and infrastructure projects. Expectations are that these opportunities will reshape interactions and relations within the region and between the region and other countries and regions of the world.

To the degree that Mexico participates more fully and permanently in international markets, the state of Veracruz plays a relevant role. Veracruz is considered a rich state in terms of its natural resource endowments, its maritime port capacity, its strategic location in the rapidly expanding Gulf of Mexico basin economy, and other major elements of its basic infrastructure. Veracruz is Mexico's fifth most important state in terms of its contribution to the country's gross domestic product, with 6% of total GDP in 1994. The Veracruz economy is still strongly linked to agriculture. In terms of volume, Veracruz produces more than 54% of the country's orange crop, 50% in the case of papaya, and 87% of its pineapple. One third of Mexico's banana crop is harvested in Veracruz, and 30% of its rice crop is produced in this state. It is also the leading national producer of both coffee and sugar cane. Veracruz also contributes with approximately 8 percent of national total livestock production.

These numbers depict how important Veracruz is for Mexico's economic growth expectations. This wealth in terms of natural resource endowments, however, has not resulted in higher levels of income and welfare for the state's total population. On the contrary, declines in international prices of basic commodities produced in the state, as well as the severe economic reforms imposed by the national government, have further complicated the economic and social crisis in Veracruz. Nevertheless, leaders in the state's private and public sectors are convinced that Veracruz can achieve a higher level of economic development in the medium and long run. They are also convinced that to attain economic improvements will require further economic restructuring, a process already set in motion by recent policy changes. A set of institutional, economic and administrative

policies have been implemented in order to stimulate efficiency and productivity among workers and firms.

With the implementation of NAFTA and the potential creation of the Free Trade Area of the Americas (FTAA), Veracruz is poised to become an important focal point for new direct foreign investment, particularly given specific comparative advantages derived of its geographic location, and natural resources endowment. Undoubtedly, this is an economic strategy that represents a big challenge for Mexicans. With this challenge, and the challenges currently in process from previous trade policy changes and restructuring efforts, comes a need for improved information systems and monitoring processes.

The Statistical System

The economic restructuring in Mexico in recent years carries with it significant changes in all sectors of the economy. Yet as events unfold, there is a tendency to utilize existing indicators to evaluate and explain new economic realities, or to use existing methodologies to calculate indicators that differ significantly from the economic reality that they are now trying to explain. In other words, there exists a degree of conceptual obsolescence with respect to data collection and statistical processing[4] in the context of

[4]For example, the current unemployment rate reported for Mexico is around 5%, which is relatively low. However, it is not clear under what kind of assumptions this indicator was calculated. Are the population involved in the informal economy considered as employed? Were those children selling bubble gums on the street, washing windshields in cars, clowning at stoplights or begging (which is better than stealing), taken into account to estimate this rate? If the answer is yes, then this number will be accepted as true. However, its acceptance will cause that a new set of questions that are relevant are related to the minimum welfare level required for a family.

reality and the subject of analysis. In this sense, there is a gap between a dynamic economy and the statistical system responsible for cataloging this economy.

Changes that have been occurring in Mexico carry implications for the statistical system and policy formulation. Emerging policy needs have exposed limitations and gaps in the array of economic statistics on the Mexican economy and the ability of analysts to fully assess the implications of policy changes. Evolution is taking place in economic conditions, in the technical nature of production systems, in the perception of problems, and in policies directed at all economic sectors.

Macroeconomic data accomplished with complementary microeconomic data are required to describe the many important issues that concern the socioeconomic structure of the Mexican economy. Narrowing the existing gap between microeconomic and macroeconomic data and updating the statistical systems of data collection and processing, will result in the estimation of better economic indicators as well as greater certainty and proliferation of economic analyses studies at the regional level, at the commodity level, and obviously at more aggregated levels.

Justification

Given the situation described above, the justification for this research is based on the following observations:

- The set of economic and institutional reforms implemented by the Mexican government since 1982 have opened the Mexican economy to foreign competition.

- Veracruz, traditionally an agricultural state, has been thrust into this transformation process. It possesses the potential and is in the process of developing into a modern industrial state. In this sense, Veracruz is undergoing significant economic restructuring.
- Monitoring socio-economic change is necessary to estimate the impact of institutional change on the evolving economic system. Existing data, however, are not sufficient to perform economic analysis at more disaggregated levels (at the household level, or at the commodity level), and in a regional, national or global context.
- Structural change demands a new and high quality information base and information systems to adequately monitor the changing process through time.
- Utilization of regional economic models (econometric models, general equilibrium models, input-output models, etc.), given the limitations in existing data and the statistical system, is practically impossible.

Problem and Research Focus

The economic restructuring of Mexico that has occurred over the past 15 years, as a result of the adoption of economic policies based on the external economy, has had a significant impact on the economy of Veracruz. This impact has focused more on issues such as input reallocation (land tenure, labor migration) and the institutional setting, rather than on those crucial inputs to support a global economic growth strategy, such as education and

training, research and development, infrastructure, and information system. Documentation and evaluation of these "impacts-related" issues is necessary for improved formulation of state and regional development strategies for Veracruz in the emerging global context.

Veracruz, historically a rural state dependent on agriculture, is undergoing a significant economic restructuring process. For Veracruz to succeed one challenge is the development of a knowledge and information system in tune with new trends around the world.

Objectives of the Study

Planners, decision makers, investors, and the society in Mexico need a better understanding of the economic restructuring process. Specific objectives for this research are

1. To explore the pattern of economic development followed by Mexico in recent years as a result of globalization and an export-oriented development strategy.

2. To identify factors and forces that influence regional economic change and determine future economic development under the umbrella of a free trade, market oriented economy, through the case of the economy of Veracruz.

3. To express the contextual role and impact of governmental actions in pursuing an open market economy.

4. To develop a conceptual framework to assess the relationship between macroeconomic and microeconomic data required to perform economic analysis.

5. To introduce one of the most well known models used in economic analysis, the input-output model (I-O model), to emphasize the potential advantages and disadvantages derived of its use, and, in the process, identify the information needs to make this model effective for regional economic analysis.

To accomplish these objectives it will be necessary to use a broad approach to analyzing the issues facing the economy of Veracruz. A complete analysis is practically impossible given the limitations mentioned herein; however, the long-run challenge to the objectives for this research is to perform economic analysis and forecasting for increasingly globalized state economies, where the use of more sophisticated quantitative methodologies is appropriate.

Procedure

Recent applied research on the economy of Veracruz state is limited. In this sense, the objectives of this project will be achieved by doing the following:

- National, state, and regional data will be reviewed and analyzed.
- Interviews will be realized with government officials, academic colleagues, and selected private sector interests.
- A conceptual framework will be developed to represent information requirements for socio-economic analysis.
- A conceptual input-output model will be described to help identify specific data needs.

Organization of the Study

The organization of the dissertation is as follows: Chapter 2 introduces the reader to a definition of the process of globalization of the economy, explains why globalization is taking place and discusses how Mexico is affected by this process. A discussion of the issues related to the formation of regional trading blocs around the world is presented in chapter 3. The objective is to focus on NAFTA and its implications for Mexico. Chapter 4 content examines changes in the Mexican economy from 1940 to the present. The objective is to explain the structural change process as Mexico moved from import-substitution development strategy toward an export-oriented strategy. In chapter 5 a geographic and socio-demographic delineation of the state of Veracruz is presented. In chapter 6, as a continuation of chapter 5, the economic profile of the state of Veracruz is introduced. Trends in critical economic variables during the period since adoption of the new economic strategy are examined here. The role of the government within the context of the export oriented economic strategy is discussed in chapter 7. The discussion emphasizes that economic restructuring like that experienced by Mexico in recent years implies by itself a restructuring of the role of the government and economic policy. The critical role of economic analysis in policy-making, and the development of a conceptual framework to support data collection and analysis is highlighted in chapter 8. In chapter 9 the conclusions are presented and plans for future research are outlined.

CHAPTER 2
REGIONAL RESPONSES TO ECONOMIC GLOBALIZATION

Introduction

The dynamics of the world economy over the last two decades has been "globalization." All countries around the world, regardless of economic status, are undergoing significant restructuring as their economies adapt to this new economic trend. Globalization is a broad concept, including not only economic aspects but also technological, political, and social. In economic terms, globalization means that production and trade have become inexorably intertwined. Production processes are spread across the globe. Producers must invest to trade. Most products entering the market today are either traded or heavily reliant on traded components for their production. More and more jobs rely on trade on the side of both exports and imports. Investment flows worldwide have multiplied. Among the technological factors promoting globalization, improvement in transportation and communication have reduced transport costs significantly, leading to a greater expansion of trade around the world. In political terms, the collapse of communism and the abandonment of inward-looking models of development in favor of private enterprise, lowered barriers to

trade, and a relaxation of governmental intervention into economic life have become important forces accelerating the globalization process.

One of the main features of this global economy is the increasing interdependency between countries. Thus what is happening in the economies of Russia, Brazil, South Korea or the cities of New York, Tokyo or Sydney is determined by their role in systems of production, trade and consumption which have become global in scope and complex in structure (Knox and Agnew, 1989). Globalization is not just deepening the current relations among countries but broadening them as well. In this sense, the challenges for the involved countries in this process are (1) people around the world must learn to live in global markets; (2) governments must learn how to implement domestic policies which will help them to adapt the economy to the reality of imposed and managed change with bearable social cost; and (3) firms must learn how to compete in global markets. The purpose of this chapter is to explain why globalization is a phenomenon in fashion at this time and why Mexico seek to participate in this process.

Background

The world economic system has experienced periodic crises throughout its history. An economic crisis is a period in which the previous expansion cannot continue on the same basis. For balanced growth and development to be sustained, it is necessary for the system to continually undergo economic, social, political, technological, and cultural transformations. In this sense, economic crises have become a spur for economic and

technological revolutions. The economic restructuring process emanating from each crisis has long been a topic of research for many people, who have contributed significantly to the literature about economic change patterns. Different theoretical frameworks have been developed to explain the nature of economic change. Three groups of the most important theories are *long wave theories*, which suggest that economic change occurs in cycles and is associated with major shifts taking place over fifty years or so in the prevailing technologies; *world system theories*, which treat the world system as the fundamental unit of analysis and argue that economic change in any country can be understood only by examining the international economy as a whole; and *regulationist theories*, which take the national economy as the frame of reference and explain economic change in terms of distinct historical phases, each characterized by a particular type of production (Healey and Ilbery, 1990). In this chapter the long wave theories will be utilized to classify some characteristics of the globalization process.

The Long Wave Theory and Technological Innovation

The observation that economic development does not occur smoothly but tends to proceed in jerks and leaps has long fascinated economists. The world recession of the late 1970s and early 1980s revived a long-running debate about the occurrence of cycles. This renewed interest may be attributed to that world economic crisis and the failure of short and medium-term analysis to account for it (Freeman, 1984; Vasko, 1987; Marshall, 1987). The best-known long wave theory is one proposed by Kondratiev (1935), who observed the long wave by means of price data (Delbeke, 1987; Mager, 1987). Kondratiev postulated that the

industrialized nations of the world, when viewed collectively, have experienced successive cycles of growth and decline since the beginning of the industrial revolution with a regular periodicity of 50 to 60 years. In other words, long waves of global economic change run in 50 to 60 year cycles (half-century cycles) (Fik, 1997). Each wave comprises periods of recovery, prosperity and recession and is terminated by severe depression which in this model occurred in the 1820s, 1880s, 1930s, and 1980s. Kondratiev emphasized the discontinuity in the production and duration of long-term fixed capital as the most powerful force behind the long wave.

Building further on the work of Kondratiev, several authors refined his analysis and dated the long waves in slightly different ways. Some authors, such as Schumpeter, Kuznets, and more recently Mensch and Kleincknecht, assign a very important role to technological innovation as the engine of economic development.[1]

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[1]Schumpeter (1934) believed that it was technological innovation that provided the spark that generated economic growth and development, and that the wave of growth generated by the most important new technologies had an up-down life cycle of about 50 years. He characterized the cyclical course of capitalist development as a "process of creative destruction" where the destructive disruption of capitalist development was a necessary functional prerequisite for the creative renewal of development in a fresh long cycle of expansion (Marshall, 1987). Kuznets (1953), dissatisfied with Schumpeter's explanation with respect to the question of discontinuity of innovations, tried to find another one. To him the only plausible answer to this question is that technological opportunities for their applications are discontinuously distributed over time. He associated this discontinuity with the availability of major technical inventions. He suggested that the appearance of inventions is partly conditioned by the functioning of the economic system (Reijnders, 1990). According to that, Kuznets focused his analysis on the economic behavior of real variables such as economic growth. He found that within each Kondratiev wave there are two cycles of economic growth, known as "Kuznets cycles" (in honor of him). These are cycles of change in the rate of economic growth; the first one is known as phase-A, while the second one is known as phase-B (Fik, 1997). Kuznets cycles are characterized by the sequence of four phases: recovery and growth, prosperity, recession and stagnation, and

Mensch (1979), based on earlier work by Kuznets, Schumpeter and others, updated Schumpeter's theory and gave it an empirical base. He introduced the concept of "techno-economic system" (Mosekilde et al., 1989). A techno-economic system is an interrelated set of technologies with which are associated particular sets of raw materials, sources of energy, and distinctive products. Using this concept, Mensch described how the development of the industrialized world could be pictured as a succession of techno-economic cultures. The emergence of a new techno-economic system also involves the development of supportive infrastructures that open additional product and factor markets and contribute to the major surge of economic growth that new techno-economic systems generate.

Doubtlessly, Mensch's important contribution was just tying together in an explanatory framework the empirical observations of Kondratiev and the technological innovation hypothesis of Schumpeter. He concluded that basic innovations produce structural changes in the economic system and drive the business cycle.

Freeman (1987) outlines an alternative approach based on recognizing shifts in techno-economic paradigms, which suggests that long waves of economic activity are more broadly based and embedded within society. This model has several key features (Hayter, 1997). First, an economic model is generated by technological and institutional changes which form the basis for each long wave. Second, industrialization is a secular process which becomes increasingly complicated over time. Third, industrialization is characterized by economic crises which in turn help stimulate transformation. Fourth, economic

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depression. Each one lasts approximately 10 to 15 years.

transformation is led by particular "leading-edge" economic changes from which productivity advantages are realized that could no longer be obtained by previous arrangements. In this sense, Freeman and Perez (1988) point out that since the late 1970s the restructuring of the global economy involves a shift in "techno-economic paradigm" from "Fordist mass production"[2] to a new one based on "information and communication." This new paradigm comprises numerous radical and incremental innovations in technology and organization which have already altered the conditions underlying production and distribution and created new industries in microelectronics, biotechnology, telecommunications and computers plus software, robots and machine tools (Hayter, 1996). Even more, Freeman and Perez (1988) emphasize that the transition from a Fordist paradigm to an information and communication techno-economic paradigm asserts that the economic impacts of the new information technology are so pervasive that institutional innovations with respect to industrial organization, labor relations and training, education and even forms of international cooperation are required. The challenge for nations and their constituent governments, firms and labor organizations, is to "match" the new technology with institutions to provide the conditions for stable investment behavior which best serves community interests. Any mismatch in this respect could represent competitive disadvantages and sources of instability.

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[2]"Fordist mass production" system is characterized by a mass production culture, involving the mobilization of masses of labour in huge factories to produce large batches of standarized goods for mass consumption. Production was organized within vertical integrated firms which operated increasingly across the globe (Holly, 1996) .

The Fifth Long Wave

The economic depression of the late 1970s marked the end of the fourth long wave. Mass production technologies reached market saturation in the 1970s and began their decline in the early 1980s (Berry et al., 1997). At this moment, humankind is passing through the transition to the fifth wave. It is still unknown what the nature of this wave will be, but what is clear is that the new growth path supporting infrastructure is that of cyberspace on the Internet, the global "information superhighway." The emergence of a new technological paradigm organized around new, more powerful, and more flexible information technologies[3] is now characterizing the production process.

Associated with the structural transformation currently taking place have come yet another kind of phenomenon which is important to mention here. First is the impressive growth of the service sector. The new set of services appearing recently has not been services in the traditional sense at all, but new kinds of specialized technical and business activities, and a variety of public and not-for profit organizations. According to Berry et al. (1997, p.137) these services "have become the driving forces of the modern thoughtware economy, the leading sectors that, simultaneously, are helping to restructure the geography of the manufacturing industry because they are the root sources of most of the productivity increases in manufacturing: technological innovation, better resource allocation, and better education." Nusbaumer (1987, cited by Berry et al, 1997) points out that the major functions

[3]Information technology production is based on microelectronic technologies, including microprocessors, computers, robotics, satellites, fiber-optic cables, and information-handling and production equipment, including office machinery and facsimile machines.

of these services are (1) knowledge carrying, including education and training, producer services, business services, and other forms of advisory services; (2) linkage forming, including establishment of channels of communication and the means for carrying information, as well as creation of markets; (3) communication, the actual information transmission process, which combines with the linkage function to reduce distance and support the market system; and (4) information, the content that is transmitted. The advanced services sector permits business to be conducted more efficiently and effectively. In this sense, resource use can be closer to its maximum utilization. The new telecommunications systems transmit information at increasingly greater speed and lower cost. As a result, distance no longer is a constraint in doing business around the world. "The demise of distance as the key to the cost of communication may well prove to be the most significant economic force shaping the next half century" (The Economist, September 30, 1995, p.15).

Second is the growth of flexible manufacturing systems (FMS). The Fordist mode of organizing production is being replaced by one where more flexible forms of production, work, and inter-firm relations have forced changes in the capitalist system and its components (firms, workers, government and other institutions) (Malecki, 1997). The principal push for flexibility is the higher rate of innovation and shorter product life cycle, which means that large production volume is no longer the only way to compete (Malecki, 1997; Holly, 1996). As markets have become more global and firms compete in more national and regional markets, producers have become increasingly flexible in their product lines and manufacturing techniques.

Finally, flexible production systems as well as networks among firms suggest that spatial proximity is advantageous in order to maximize the frequency and intensity of interpersonal communication. In this sense, agglomeration economies become important for firms requiring a concentration of specialized knowledge and ready access to up-to-the minute information, together with an infrastructure of supporting facilities and services both within individual firms or institutions and in the community at large (Berry et al., 1997).

The transition to the fifth Kondratiev wave requires not merely clusters of hardware innovations but transformation of the entire socio-economic framework; thus in a sense the whole process is endogenous. The underlying mechanism is indeed the laws of motion of capital, represented by a falling rate of profit, which eventually must trigger not merely a set of technological innovations but also changes in the economic, social and political superstructure (Hall and Preston, 1988, cited by Malecki, 1997).

The Path to Growth

Economic development has been a prime goal of all countries around the globe since the end of the Second World War. However, after more than four decades of economic development policies, this goal is still in effect. The reason is that economic growth did not begin everywhere in the world at the same time, and some countries have been more successful in applying economic development policies than others. As a consequence, real per capita GDP has increased significantly in some countries, while in other countries real per capita GDP has reached low levels or is declining. Between those parts of the world that have achieved sustained growth and those that have not, an inevitable gap has appeared in

the standard of living. If we want to understand why countries differ dramatically in standards of living, then we have to understand why countries experience such sharp divergences in long-term growth rates.

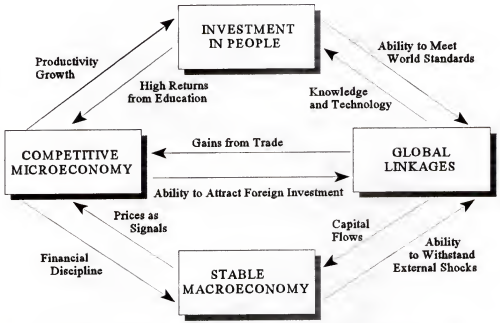

Figure 2-1 Interactions Between Firms and Government Policies in Economic Development.
Source: The Economist (1991) p. 77.

A world development report by the World Bank, published in 1991, looked back on four decades of economic policy in developing countries. It found that, according to historical data, poor countries can indeed grow and much faster than today's rich countries did at a comparable stage of development. The main reasons are technological progress and international trade (The Economist, July 13, 1991), both of which contribute to and are enhanced by movement toward a global economy.

The report established that through trade, today's poor countries can import the means (goods, technology, ideas) to make their factors of production (land and labor) more productive. It pointed that four elements --a competitive microeconomy, a stable macroeconomy, global linkages and investment in people-- feed on each other and serve as the driving force of economic development (Figure 2-1). The pattern is as follow: an efficient domestic economy needs a stable macroeconomic environment. Indeed, economic and political stability fortifies domestic economies by stimulating domestic and foreign investment, and making the economy less vulnerable to external shocks. A less distorted domestic market, where prices are determined by market forces, will lead to a more competitive microeconomy with strong links to international markets. A competitive microeconomy demands a more qualified labor force. In this sense, investment in human capital (education and training) by the government and the private sector appears as a necessary condition. A skilled labor force raises the productivity of firms and generates higher returns from investment in education. This labor force is also more susceptible to assimilation of knowledge and technologies coming from abroad, and the output of the firms has the ability to more easily meet world standards. Finally, global linkages allow domestic firms not only to attract foreign investment, but also to set strategic alliances with other firms and consumers from abroad. As a result, domestic firms can gain economies of scale and new markets for their products if foreign linkages are stimulated and sustained.

The Competitive Advantage of Nations

Major changes in the role of information, innovation and technical change in world markets have led to new theories of firm behavior. A new paradigm, one incorporating new understandings about the microeconomic foundations of competitiveness based on a different theory of production which is consistent with a new concept of innovation processes, is needed. With respect to international trade there exists a growing concern that the theory of comparative advantage based on factors of production is not sufficient to explain patterns of trade. The reason is that the assumptions set by standard trade theory are unrealistic in most cases. By taking into account these limitations, Porter (1991) constructed a theory that recast the traditional vision of comparative advantage theory from a static to a dynamic process driven by firms seeking to sustain unique technological and organizational advantages. Although Porter's theory starts with the firm, a regional context is crucial in his model of competitive advantage. In this sense, the regional content is described first, while the characteristics of the competitive firm will be introduced later.

Porter identified four broad attributes of a nation that shape the environment in which local firms compete that promote or impede the creation of competitive advantages: *factor conditions; demand conditions; related and supporting industries; and firm strategy, structure, and rivalry*. To these, Porter added a supplementary variable, governmental policies, which plays a subsidiary role in shaping regional context (Figure 2-2).

Factor conditions are what economists have called the "factors of production", that is, the inputs necessary to compete in an industry, such as labor, land, capital, natural

resources, and infrastructure. Porter suggests breaking factor conditions into two categories, *basic factors*, such as natural resources, climate, location, numbers of people, and *advanced factors*, such as educated personnel, research and development capabilities, and advanced communications infrastructure. Of these two categories, Porter emphasizes advanced factors because they are subject to enhancement through capital investment. When strategically fostered, advanced factors provide the industry with advantages because competitors find these specialized factors difficult to imitate. On the other hand, basic factors are of diminishing necessity and widened global availability because of changes in product design and improvements in transportation and communication. In this sense, the stock of factors at any particular time is less important than the rate at which they are created, upgraded, and made more specialized to particular industries.

Demand conditions refer to the characteristics of the domestic market. Porter emphasizes that sophisticated, advanced tastes among consumers; the size and pattern of growth of domestic demand; and the ways in which domestic preferences are transmitted to foreign markets, stimulate and enrich the industry by forcing firms to develop highly differentiated products. In this sense, demand conditions influence the ability to achieve economies of scale in production, and the rate and character of improvement and innovation.

The third component within Porter's model is the presence in the nation of *related and supporting industries* that are internationally competitive. Supporting industries are part of the surrounding environment that fosters success by providing dynamic externalities. Firms tend to cluster into grouping that link supplier and buyer firms. These linkages tend to create a positive environment as supplier firms develop specialized skills to satisfy their

customer needs. The relationship with home-based suppliers is particularly important in the process of innovation and upgrading. Again, a highly differentiated supplier network erects competitive barriers because firms inside the network develop technological and organizational skills not easily duplicated.

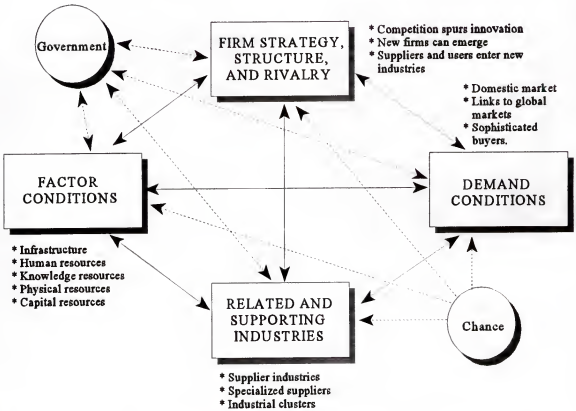

Figure 2-2 Porter's "Diamond" Diagram of the Determinants of National Advantage. Source: Porter (1991).

The fourth component, *firm strategy, structure and rivalry* involves corporate goals and management systems. In particular, Porter stresses how competition forces firms to make strategic investments in product and process innovations.

Taken together, these four components form an interactive diamond. In Porter's opinion, the more intense the interaction, the more dynamic the industry's competitive capabilities. There are two more components which are not internal parts of the diamond but which play a very important role in making the components of the diamond interact faster. These two components are the government and chance.

The role of government is seen by many as a vital, if not the most important, influence on a modern international economy. Porter points out that its real role in national competitive advantage is in influencing the four components of the diamond as is illustrated in Figure 2-2. Government can influence (and be influenced by) each of the four components either positively or negatively. For example, factor conditions are affected through subsidies, policies toward the capital market, policies toward education, and the like. Government's role in shaping local demand conditions include the establishment of local product standards or regulations that influence buyer needs. Government is also often a major consumer of many products in a nation, among them defense goods, telecommunication equipment, aircraft for the national airline, and so on. Government can shape the circumstances of related and supporting industries by controlling advertising media or by the regulation of supporting services. Government policy also influences firm strategy, structure and rivalry, through the regulation of capital markets, tax policies and antitrust laws.

Government policy, in turn, can be influenced by any of the components. For example, choices about where educational investment are made, are affected by the number of local competitors. Effective choice, use, acquisition, diffusion and national strategies, on

the actions of individual firms, or groups of firms, and especially on the interaction between these public and private sector actions, are aspects influencing government performance.

Government has an important influence on national competitive advantage, and such influence can be either positive or negative depending on the final effect. Something that should be clear at this moment is that government policy will fail if it remains as the only source of national competitive advantage.

Finally, the last component of the diamond is chance events. According to Porter, chance events also play a role in the generation of competitive advantages. Chance events are occurrences that have little to do with circumstances in a nation and are often outside the power of the firms (and often the national government) to influence. They are important because they create discontinuities that allow shifts in competitive position. They can nullify the advantage of previously established competitors and create the potential that a new nation's firms can supplant them to achieve competitive advantage in response to new and different conditions. Some examples of chance events mentioned by Porter are: acts of pure invention; major technological discontinuities (for example, biotechnology); discontinuities in input costs such as the oil shocks; significant shifts in world financial markets or exchange rates, wars, etc.

With this, Porter's model is complete. The components measure the extent to which the national environment is a fertile one for competing in an industry. The diamond, reflecting many diverse elements of the nation, measures how well the nation creates and transmits these forces to its firms, as well as the presence of the insight and tools needed for competitive advantage. The components are mutually dependent because the effect of one

often depends on the state of others. In this sense, the diamond offers a wide array of rich relationships. Most importantly, it offers such a complex set of variables and possible interactions that it is difficult, if not impossible, to specify causal relationships. In particular, Porter points out that two elements -domestic rivalry and geographic industry concentration- have especially great power to transform the diamond into a system, domestic rivalry because it promotes upgrading of the entire national diamond, and geographic concentration because it elevates and magnifies the interactions within the diamond. The industry's geographic concentration affords the most effective means for intensifying the interactions and bolstering the industry's competitive capabilities.

The Competitive Firm

In the increasingly competitive world economy, developing countries face great obstacles to achieve sustained economic growth. Since the Second World War, economic growth in these countries have been intimately linked to export of manufactured products. Nevertheless, despite this industrialization effort, most of their exports are still dominated by primary commodities, where agricultural or mineral/energy resources provide a relatively easy option for their developing expectations. However, low world prices and slow growth in global demand mean that relying on this option produces, at best, sustained but slow growth. Specializing in the export of agricultural and/or raw materials can provide rapid economic growth in the short term if world commodity prices are enjoying one of their periodic booms. However, to sustain a rapid export growth in primary products in the long

term is practically impossible given the increasing role of advanced factors of production as technology and innovation in economic growth.

Porter's diamond teaches us that the generation of competitive advantages is not only a matter of the firm. Indeed, to create competitive advantages for the firm is a task where all the components of the national economy have a role to play. What is the responsibility of the firm is to mobilize these competitive advantages, to take advantage of them through skill management, and to become a successful producer in the global economy? In doing so, most of the success will be reached in the availability and efficient utilization of the factors of production. In this part, the role of factor conditions in the competitive advantage of a firm will be explored. Figure 2-3 depicts the set of factor conditions defined by Porter.

Human resources. Economic development includes employment. All countries which have managed persistent growth in income have also had increases in the education and training of their labor force. The quantity of workers, their skills, their standard working hours and work ethic, and so on, are all aspects which will increase productivity of labor. In this sense, investment in education and training by public and private sectors will contribute to enhance the labor force capabilities.

Physical resources. Natural resource endowments are also important for economic development. The abundance, quality, accessibility, and cost of land, water, mineral, or timber deposits, hydroelectric power sources, together with other physical traits such as location, time zone, and climate, are some of the physical resources involved in economic development.

Knowledge resources. This refers to nation's stock of scientific, technical, and market knowledge bearing on goods and services. Knowledge resources reside in universities, government research institutes, private research facilities, government statistical agencies, business and scientific literature, market research reports and databases, trade associations, and other sources. Knowledge resources are a cornerstone to the generation and integration of new knowledge.

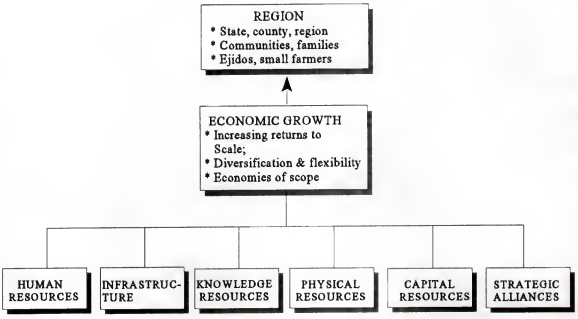

Figure 2-3 Factor Conditions Determining Regional Competitive Advantages.
Source: Adapted from Porter (1991).

Capital resources. This refers to the amount, type, and cost of capital available to finance industry. Important variables include national savings rates, the structure of capital markets, and governmental policies that offset the money supply and interest rates. The globalization of capital markets, and the large capital flows among nations, is slowly making national conditions more similar around the world. However, substantial internal differences

among countries remain and are likely to do so indefinitely. In this sense, the homologation of financial markets around the world requires a radical and strong regulation process by local governments.

Infrastructure. Infrastructure or social overhead capital has always been an important part of development. It includes type, quality, and user cost of the transportation and communication system, health care, cultural institutions, and so on. For example, Malecki (1997) emphasizes that physical infrastructure is critical because standards of international commerce demand certain forms and formats. Other infrastructures like modern airports and seaports, allow nations to participate in global economic activities.

Strategic alliances and agglomeration. These are also known as social technology. It refers to dynamic externalities, strategic alliances among firms, relations among firms rather than within firms, economies of scope, flexible specialization systems, learning by doing, and so on. For example, Berry et al. (1997) emphasize that the concentration of industry in a particular region facilitates knowledge spillovers between firms through spying, imitation, and rapid interfirm movement of skilled labor. Ideas are quickly disseminated among neighboring firms, promoting production enhancement, and therefore the growth within the region. Porter believes that it is local competition and rapid churning that foster the pursuit and rapid adoption of innovation. Malecki (1997) points out that alliances can: enhance a firm's competitiveness, permit rationalization in a stable country, provide a transition to a new market, and open up a new business. Companies enter into alliances to gain a number of benefits. Porter mentions the following: one is economies of scale or learning, achieved by joining forces in marketing, component production, or assembly of

particular models. A second benefit is access to local market, needed technology, or to meet government requirements for local ownership. A third benefit is to spread risk. Finally, sophisticated competitors often employ alliances to shape the nature of competition in an industry by, for example, licensing a technology widely in order to promote standardization.

Summary

The globalization of the economy is an inevitable trend of increasing interaction in international trade, multinational investment, and the development of science and technology. Technology has been a major driving force behind the globalization of production and related changes in trade and investment patterns. An information technology revolution has greatly increased the flow of information across the planet, making knowledge a more important production factor than labor, capital, or raw materials. Many developing countries are expecting that this new information-based economy has the potential to add a new dimension to economic integration that could accelerate the growth and development dynamic in much of the world. Today's shift from industrial production to knowledge production requires newer -and far more sophisticated- skills than last century's migration from the farms to the shop floor. So government and firms also need to find new approaches to the development challenge which extend investments in industry and infrastructure, to investments in people.

CHAPTER 3
OPENING THE MEXICAN ECONOMY

Introduction

At this time nearly every developing country participates in, or is discussing a regional integration arrangement. In this effort, international institutions such as the World Bank (WB), the International Monetary Fund (IMF), and the recently created World Trade Organization (WTO), have become important sponsors of issues such as how to join a regional arrangement or how one might best be organized. This "regionalization" of the world, however, has not been free of controversy. Indeed, there is a hot discussion among researchers and decision makers around the world about the advantages and disadvantages of regional trading arrangements and their opposition to multilateral arrangements. Those in favor of regional integration arrangements present them as a means of stimulating competition, reaping economies of scale, winning capital inflows, and promoting technology transfer. They are said to allow a measure of liberalization by countries that are unwilling to open up on a non-discriminatory basis and to facilitate liberalization in areas that are too complex to be negotiated successfully in a multilateral fashion. Opponents, however, see regional arrangements as fostering discriminatory trade restrictions, causing governments to look inwards rather than outward and undermining the multilateral trade system.

Mexico, as a developing country, is part of the regional integration movement and discussion. Since the signature of NAFTA in 1992, Mexico has reinforced its regional agreements within the Americas, with the European Union (EU), and within the Asia-Pacific Economic Cooperation (APEC). In this way, in addition to NAFTA, Mexico has free trade agreements with Costa Rica, Bolivia, and Colombia and Venezuela (the Group of Three), and has been negotiating others with the EU, APEC, and the initiative of the Americas, better known as the Free Trade Area for the Americas (FTAA).

The purpose of this chapter is not to add more pages to the discussion between regionalism and multilateralism because the literature about that topic is extensive. The idea is to describe the Mexican experience in the context of regional trading arrangement, as well as its economic expectations derived from this kind of economic strategies.

Mexico and the NAFTA

NAFTA was singed by the leaders of the United States, Canada, and Mexico on December 17, 1992. It began on January 1, 1994, to eliminate most tariff and nontariff barriers to trade between these three countries within 15 years. The idea was that reducing trade barriers should, in time, stimulate employment and economic growth in each country. NAFTA nations are large and contiguous, and already very good customers. Indeed, they collectively account for a market of more than 360 million people. Canada is the largest trading partner of the United States and Mexico is ranked in third place, after Canada and Japan. To complete the nexus, the United States is the largest trading partner of both Canada

and Mexico, accounting for around 70% of their trade (Klein and Salvatore, 1998). As can be seen, the United States' market is quite important to Canada and Mexico and, even more important, it is strategically located geographically between these two countries.

Before 1982, the Mexican economy was a closed economy; however, after the liberalization of the past decade, Mexico became a more open economy. Trade barriers against outsiders presently are low. They are scheduled to be lower still in the coming years if the arrangement for potential economic liberalization projected by the Uruguay Round and the FTAA become a reality.

With respect to the trade relationship between these three countries, it appears more as a complementary relation than a competitive one. Indeed, the economic asymmetries existing between Mexico, the United States of America, and Canada are huge. Mexico is still a traditional country, with approximately 30% of its total population living in rural areas. Its economy is strongly supported in the agricultural sector, with a relatively abundant low-skilled labor force, while the United States has a relative abundance of high technology and capital, and Canada a relative abundance of natural resources. Therefore, trade expansion is expected to be more of the inter-industry type based on differences in factor endowments and stimulating a complementary economic relationship rather than of the intra-industry type based on product differentiation, motivating a relationship of competitiveness.

Even though static gains from trade are not so promising, the expectations for the dynamic gains from trade derived from NAFTA are considered to be spectacular. Salvatore (1997) mentions as the probable dynamic gains the following:

(1) Increased competition. When trade barriers among nation members are eliminated or reduced significantly, producers in each country must produce more efficiently in order to meet the competition with other producers. In this sense, increased competition becomes an important spur encouraging efficiency and productivity in the production side. On the other hand, a higher level of competition is likely to motivate the development and utilization of new technologies as well as induce a greater stream of funding for research and development. At the end, the cost of production will decline and society in general will gain from lower prices in the goods and services market.

(2) Economies of scale. An enlarged market is likely that generates internal and external economies of scale. The permanent globalization of firms -that is, firms producing for a more global market, where political frontiers are less and less important- and the possibility of development of strategic alliances among firms in a global context, constitute an excellent scenario for firms to grow. The challenge for the government is to design efficient financial networks as well as major mechanisms of communication and knowledge with respect to production systems and consumption markets.

(3) Stimulus to investment. An enlarged market is also a good stimulus for investment. The dynamics of competitiveness demands greater flows of investment to meet the increased competition. Furthermore, the formation of economic blocs such as NAFTA standardizes the flows of capital among country members, reducing risk and promoting stability in the financial markets.

(4) Economic stability. An enlarged and more homogeneous market reduces instability and should smooth business cycles. In the case of Mexico this is particularly

important because the Mexican economy has been seriously affected by periodic economic crises. The length of the most recent crisis lasted only about one year. The expectation for the future is that the impact of these crises will be diminished and thereby reduce instability of the economy.

NAFTA is a unique case in the world because it encompassed two developed countries and a developing country. In this sense, the expectations created by this experience around the world are substantial. If the experiment works, then it is possible that humankind has taken an important step forward on the road to economic development for all. For example, the economic perspectives for Latin America and the Caribbean will find greater possibilities of success and the FTAA will have more possibilities of realization.

Mexican Economic Restructuring toward NAFTA

The implementation of a free trade agreement implies an economic restructuring for the involved countries. This restructuring process will be deeper or smoother, depending on the level of development as well as similarities and/or differences among the participant nations. In order to understand the economic restructuring process followed by Mexico to meet NAFTA conditions, the standard theory of international trade[1] is often used. The set of assumptions around the concept of perfect competition are borrowed as well. Subsequently, in this economic context is examined how Mexico expects to gain, with freer

[1] The standard theory of international trade guides in the analysis of the basis and the gains from trade.

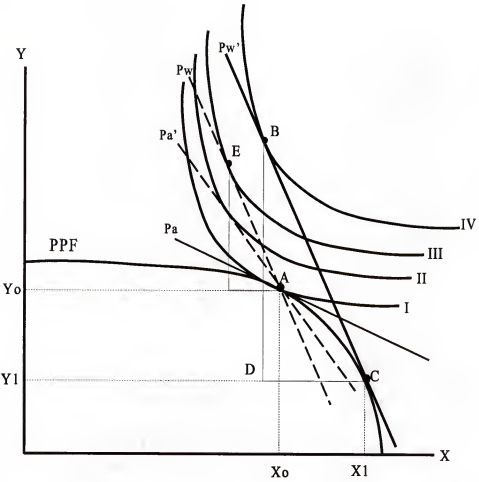

Figure 3-1 Economic Implications of the Opening of the Mexican Economy.

trade, by specializing in the production of the commodity of its comparative advantage and exporting some of its output in exchange for the commodity of its comparative disadvantage.

It is assumed that the Mexican economy under the import-substitution-industry model (ISI), can be represented by the production possibility frontier curve (PPF) as shown in Figure 3-1. In this figure, I, II, III and IV represent community indifference curves (CIC). These curves show the various combinations of two commodities (X and Y) that yield equal satisfaction to the community or nation. Higher curves refer to greater satisfaction, lower

curves to less satisfaction. According to the shape of the PPF curve, X is a high labor content commodity, and some examples of this of this commodity are tomatoes, Persian limes, textiles, or maquiladora industry; while Y is a high capital content commodity such as wheat, soybean, sorghum, or computer software.

Bringing together the PPF and the CICs curves, it is possible to see that the indifference curve I is the highest indifference curve that Mexico can reach with its production frontier. Thus, Mexico is in equilibrium or maximizes its welfare, within the ISI model, when it produces and consumes at point A, the tangent between PPF and CIC-I. The equilibrium-relative commodity price at point A, the tangent point, is given by the slope of the line Pa. Thus, this line is tangent to the nation's PPF and indifference curve I at the production and consumption point A, and the relative commodity price is Pa.

Since the United States is one of the most open economies in the world, and to simplify the analysis, it is appropriate to assume that its relative commodity price is close to that in the world. In this sense, Pw is both the world relative price ratio and the US price ratio.

Under the ISI model, Pa<Pw, which means that Mexico has a comparative advantage in commodity X and the United States in commodity Y. It follows that both nations can gain if they specialize in the production of those products in which they have comparative advantage and exchange for those in which they have comparative disadvantage.

In 1982, when Mexico decided to abandon the ISI model, it initiated a unilateral and deliberate program to open the economy to international competition. As part of the program, a reduction of government obstacles to trade through the implementation of

policies including liberalization of official prices and a reduction in subsidies to the private sector, took place. The idea of this strategy was to adjust the domestic relative price ratio to the world relative price ratio. In this sense, the slope of Pa started to move towards Pw. Once the price ratio began started changing, the PPF curve started reshaping itself; however, assume for now that there is no economic restructuring process underway in the Mexican economy (i.e. there is no specialization in the production of X with the opening of trade), as a result of the opening of the economy. Thus, changes in the price ratio of goods allows Mexico to increase consumption. The movement from point A to point E in consumption measures the gains from exchange. Mexico is in a better economic situation given that it is reaching higher levels of consumption. However, notice that there is no equilibrium in production at point A with trade because at this point the marginal rate of transformation of X for Y (MRTxy) -it refers to the amount of Y that Mexico must give up to produce each additional unit of X- is not equal to the world price ratio Pw. Through an input reallocation process and an economic restructuring process, the Mexican economy can restructure its economy toward a more efficient status where the equality is reestablished. In order to be in equilibrium in production, Mexico should expand its production of X until it reaches point C, where MRTxy = Pw. At this point, there is a movement from point E to point B (on indifference curve IV). This increase in consumption represents the gains from specialization in production. Until now, the cycle has been completed. At point C the economy has become specialized in the production of X, and by the effect of trade with the United States, a new consumption level has been reached at point B, the highest possible

consumption level that the economy can achieve under the new prevalent economic conditions.

The Economic Restructuring

The movement from A to C in the graph, in reality, implies a major economic restructuring process for the Mexican economy. General points about the meaning of this restructuring process must include both changes in the economy and the socio-cultural responses to these changes.

The major impacts of NAFTA in the short run occur primarily in trade between the United States and Mexico. Given that the United States is a much larger country than Mexico, and entered as a more open economy, the burden of adjustment to NAFTA is much greater in Mexico than in the United States. In order to organize the description of the economic restructuring process, those immediate adjustment implications are presented first, followed by longer-run implications.

(1) Adjustment of the domestic price ratio to that in effect in the world. The Mexican economy has put in operation an aggressive deregulation and price liberalization program. With support from an interventionist government, the Mexican economy matured for more than forty years under the auspicious of the ISI. Expansive fiscal and monetary policies as well as restrictive commercial policies were the driving force of this economic model. Many generations of Mexicans were raised within the culture of public subsidies, guaranteed prices, import licenses, and a paternalistic government. Now as adults, they represent an obstacle to change because they carry with them inertia from the past. The challenge for the

government, however, is to reorient this cultural trend. The seed of modernization, efficiency, and productivity must be planted in new generations, if not transplanted in the older ones.

(2) An interventionist government is at the same time an oversized government. In other words, the government not only is in charge of its traditional activities (social security, provision of public services, etc.) but it also participates as an economic agent. In Mexico, the government was the major employer during the time of ISI. It also gained ownership of important industries and enterprises such as airlines, electricity, telephone, iron, oil, banking, and others. Now, the privatization or re-privatization of the companies involved has become an important activity in the restructuring process. A problem surrounding privatization (or in some cases, elimination) of these companies has been the need to fire employees, in order to cut public budgets, and to redefine the new government's role according to globalizing expectations. The new economic conceptualization, however, appears ambiguous and unfair to much of Mexican society. Undoubtedly, these measures placed in motion by the Mexican government means a radical social transformation for a society not used to competing in a labor market driven by productivity and efficiency criteria.

As a result, unemployment rates have increased. Neoliberalism as a mode of production is severely questioned with respect to its potentiality to reactivate the Mexican economy and to offer a real choice for a growing population demanding better job opportunities.

On the Road to Specialization

Probably the most critical and controversial part of the Mexican economic situation involves the movement from point A to point C in Figure 3-1. Keeping the assumption that the shape of the PPF is unchanged, the specialization process that explains this movement is characterized by a set of economic rearrangements that, in some cases, will mean real structural change for the economy. Some implications of these changes can be summarized as follows.

In the movement from A to C, the production of Y decreases from Yo to Y1. What this means, in real terms, is the bankruptcy or the productive reconversion of some firms involved in the production of Y. In any case, it implies a release of inputs originally utilized in the production of Y. That is, labor, capital, and natural resources, now must be employed in other sectors of the economy. Under the assumption of perfect mobility of factors of production within the country, the labor force, as a factor of production, must be perfectly mobile (i.e, workers move freely throughout the country in search of employment). When this factor of production, however, is shifted from one economic sector to another economic sector, a major problem often appears. An individual's skills are not perfectly mobile. The worker may not be able to perform any activity in any other economic sector. Thus, even if the worker can move to another place, the person may be unskilled, unable to perform tasks which appear strange, and will require some degree of training and specialization. As a result, urban areas can be found replete with unemployed or underemployed population as

in Mexico City. This high concentration of rural population in an urban world that is strange and cruel for them generates a set of social distortions which, in the medium and long run, contribute to social disequilibrium in urban areas.

In the worst case, assuming that the worker has the required skills to perform a more technical job, the high concentration of population in the cities has created a labor surplus which reduces the possibility of finding a job to the minimum. Once again "the factor of production" appears immobile under a perfect mobility assumption even though, the people migrate because "the factor" is not prepared to enter the new economy.

A similar condition can prevail with respect to capital. Refering again to the agricultural sector, a major portion of capital takes the form of land. After four and a half decades of economic protectionism and an agricultural price policy that strongly distorted the terms of trade for the agricultural sector in favor of an expanding industrial sector, the agricultural sector was left immersed in one of the deepest economic crises of the 20th century. Land as a factor of production lost relevancy in a world dominated by the services sector. The intrinsic value of land, as a factor of production, has been reduced to the minimum. Thus, capital in land has also become immobile not meeting the assumption of perfect mobility.

Under these conditions, how can the Mexican government expect that the experiment in structural adhustment will work? Knowledge and information about the market conditions emerge as necessary conditions for the economic system to work well. Indeed, timely and sufficient information with respect to the labor market as well as the goods and services market, appear as an important condition in order to reallocate inputs in a more efficient way.

At the same time that factors are being reallocated, a better understanding of the mechanics of the factor markets is needed. Without this support the medicine of liberalization could result in a major socio-economic illness.

In the movement from A to C, there is an increase in the production of X. This means more production and specialization in those activities in which Mexico holds a comparative advantage. That is, activities which require an intensive use of the labor force for its production. In this sense, Mexico appears as a natural location for the establishment of those industries which require a high content of labor in production like maquiladoras.

An increase in the production of X also means that regional markets are emerging in new products like fruits and vegetables, animals and livestock, and grains and feeds, as producers take advantage of production complementarities and seasonal variations that reach beyond national boundaries. Increasing X also means a higher inflow of foreign direct investment, technology and cross-border sourcing, oriented to the production and marketing of good X. New jobs will emerge in labor intensive industries and more economic opportunities for other segments of the population will appear in the economic scenario.

Global Economic Restructuring toward NAFTA

The most important trade-liberalization activity in the post-World War II period has been through the General Agreement on Tariffs and Trade (GATT). Indeed, GATT is a multilateral trading system based on a set of principles which define its legal framework. It has given the world a basic set of rules under which trade negotiations take place and a

mechanism for ensuring these rules are implemented on a mutual basis among all members. It is intended to play a major role in the settlement of trade disagreements between member countries.

Although the GATT is a long and complicated document, it is based on a few basic principles and aims (WTO, 1995). The first principle, embodied in the most-favored-nation clause, is that trade must be conducted on a nondiscriminatory basis. That is, all GATT members are bound to grant to each other treatment as favorable as they give to any country in the application and administration of import and export duties and charges. Thus, no country may be given special trading advantages over another; all are on an equal basis and share the benefits of any reductions in trade barriers. Exceptions to this basic rule are allowed only under certain special circumstances.

A second principle is that, to the maximum extent possible, protection should be given to domestic industries only through customs tariffs and not through other measures. This rule is designed to make the extent of protection clear and to make competition possible. A third basic provision is a general prohibition of quantitative restrictions or quotas. The idea of this rule is to make quotas less widespread, although agriculture, textiles, steel, and other sectors are still subject to quota limits in many countries.

The approach followed by GATT is to sponsor rounds, or sessions, named for the place in which each begins. These rounds have led to a number of multilateral reductions in tariff and non-tariff barriers for its members. The most recent rounds are the Tokyo Round and the Uruguay Round. The Tokyo Round was completed in 1979. In addition to tariff reductions, this Round produced for the first time agreements on rules of conduct in

nontariff areas. Codes are now specified for subsidies and countervailing duties, technical barriers to trade (standards), import licensing procedures, antidumping, and trade in bovine meat, dairy products, and civil aircraft. The Tokyo Round also set codes covering government procurement and customs valuation. Committees were established to administer each code (OECD, 1996). Undoubtedly, the Tokyo Round contributed significantly to trade liberalization.

The most recent Round, the Uruguay Round (UR), which began in 1986, included issues such as trade in services and agricultural products and the trade aspects of investment and intellectual property. The UR took more than seven years and achieved less than had been originally envisioned in part due to the difficulties associated with liberalizing agricultural trade. The experience of the UR exemplifies the growing difficulty of reducing trade restrictions through globally oriented trade agreements. At the same time, during the latter stages of the UR, there was a surge in new regional integration agreements, 34 were announced to GATT between 1990 and 1994, as well as deepening and widening of existing agreements, particularly in Western Europe (OECD, 1996). The possible implications of the recent increase in regional integration agreements for world trade, for the world trading system and for trade relations generally, have been the subject of a great deal of discussion and debate. Among the factors fueling concerns, Frankel (1997) mentions the following: (1) the shortcomings of the GATT system which provided the stimulus to launch the Uruguay Round, as well as the repeated delays in bringing the negotiations to a successful conclusion; (2) the influence of Europe. The European Community (EC) has followed an ambitious integration plan which has turned the region into a true common market, known now as the

European Union (EU). This success provided a demonstration effect around the world, encouraging emulation in the form of regional initiatives in other parts of the world. As a result, a number of countries undertook or contemplated regional integration agreements, in some instances as an "insurance policy" in the event of failure of the Uruguay Round. (3) a key factor stimulating these initiatives was the reversal of the longstanding opposition of the United States to participation in regional integration agreements. Indeed, after 1982 the United States abandoned active support for the nondiscriminatory regime in favor of pursuing its own regionalist agenda; and (4) the abandonment of import substitution strategies by developing countries. In the case of Mexico, the import substitution strategy resulted in economic crisis at the end of the 1970s and in the early 1980s. A logical prerequisite for successful regionalism among developing countries has been to discard the import substitution model in favor of the market liberalization model.

By restoring confidence in the future of the world trading system, the conclusion of the Uruguay Round on 1 January 1995 relaxed many of these concerns. Perhaps the most significant change resulting from the UR is the agreement to replace the GATT secretariat with the World Trade Organization (WTO). The WTO is a new multilateral trade organization which takes over the traditional functions of the GATT, and in addition expands and diversifies its role into new areas of activity agreed upon in the Uruguay Round: service transactions, intellectual property rights, trade-related investment issues, and agriculture (Kreinin and Schmidt-Levine, 1997). More authority is given to the WTO to oversee trade, and it also can assess trade penalties against a country when two thirds of the members find it in violation of trade agreements (Daniels and Radebaugh, 1995). The WTO inherits

GATT's rules and principles, such as the principle of non-discrimination between supplying countries (MFN), the principle of equal treatment of foreign and domestic firms (national treatment), and the outlawing of import quotas and export subsidies.

Despite this notorious achievement of multilateralism, recent experience indicates that further trade liberalization on a global basis will be harder to achieve. The appeal of regional integration shows no sign of abating, and issues raised by the interaction between regional integration agreements and the world trading system are unlikely to disappear from the international policy agenda.

GATT and Regional Integration Agreements

Although GATT is a multilateral trading system, it is possible to identify inside its framework the kind of stimulus encouraging preferential trade arrangements. For example, the principle of nondiscrimination trade policies (also known as most-favored-nation principle), inscribed in Article I, has helped achieve a progressive reduction in trade barriers on a mutual basis among all country members. GATT also recognizes the possibility of regional trading arrangements, and provides for their establishment under Article XXIV. This Article says that a group of countries may form a free trade area or customs union, dropping barriers among themselves. In other words, Article XXIV permits regional free trade areas and custom unions under certain conditions. The provisions are designed to ensure that any such arrangements will encourage the creation of new trading opportunities among the parties involved, as opposed to diverting trade away from third parties. Four basic rules are supposed to ensure this result (OECD, 1996). First, substantially all trade

must be covered by arrangements, so that they do not simply promote a few trade-diverting sectoral deals. Second, trade barriers must be eliminated, not merely reduced on a preferential basis. Third, external trade barriers towards third parties must not on the whole be higher or more restrictive after the establishment of a customs union or free trade area than they were before. Finally, recognizing that these kinds of arrangements will be phased in over time, Article XXIV requires that interim agreements include a plan and schedule for the formation of an FTA or a CU "within a reasonable period of time." These criteria are designed to ensure that regional trade arrangements lead to growth in world trade and can thus be considered building blocks of a more open world trading system. In this sense, the multilateral and regional free trade approaches are thus fully compatible within the GATT legal framework.

That regional trading arrangements and the multilateral trading system have generally been compatible is not sheer coincidence, but the result of deliberate policy choices. The challenge for the WTO will be to ensure that this continues. Much will depend on the credibility of the WTO and its capacity to accommodate and discipline regional trade arrangements, as well as to its ability to evolve according to world trade conditions.

Article XXIV embodied in the WTO agreement rendered the conditions for the creation of free trade areas and custom unions somewhat more constraining. Interpretation and understanding in the interpretation of Article XXIV of GATT-1994 clarifies the approach to be followed in evaluating the general incidence of duties and other regulations of commerce applicable before and after the formation of customs union; specifies that the time period for the formation of customs unions or FTAs should exceed ten years "only in

exceptional cases"; and stipulates that the dispute process with respect to any matters arising from the application of Article XXIV provisions on regional arrangements (WTO, 1996).

Different Forms of Regional Integration Arrangements

Regional integration arrangements may take different forms depending on the different intensities of integration and coverage among countries. The degree of economic integration ranges from preferential trade arrangements to free trade areas, customs unions, common markets, and economic unions. They involve different trade, welfare and political effects for participants as well as third countries. In this part, a brief description of each form will be presented.

Preferential trade arrangements. These trade arrangements provide lower barriers on trade among participating nations than on trade with nonmember nations. This is the loosest form of economic integration. If the concessions are one-way, the arrangement is termed a *preferential trade arrangement;* if the concessions are reciprocal, then it is termed *preferential trade area.* Examples include the Lomè preferences that European countries have granted to selected African, Caribbean, and Pacific countries and the United States' Caribbean Basin Initiative (Frankel, 1997).

Free trade area (FTA). The FTA is the form of economic integration wherein all barriers are removed on trade among members, but each nation retains its own barriers to trade with nonmembers. Rules of origin then become necessary in order to establish the conditions under which an item qualifies for preferential access within the area. Some FTAs have recently included provisions to liberalize investment rules, trade in services and

government procurement (Safadi and Nicholas, 1996). The best example of a FTA is the NAFTA, a topic discussed early in this chapter.

Customs union (CU). A CU goes one step further than a FTA by harmonizing a common external tariff against the rest of the world. The well-known example is the European Union (EU), formed in 1957 by some European countries, initially from preferential trade arrangements.

Common market (CM). A CM is a CU that also allows for the free movement of factors of production among member countries. The European Union achieved the status of a common market at the beginning of 1993.

Economic union. An economic union goes still further by harmonizing or even unifying some economic policies of member countries, particularly macroeconomic and regulatory policies. This is the most advanced type of economic integration.

Those in favor of regional trading arrangements suggest that regional integration provides an alternative track to further trade liberalization. Even more, traditional trade theory postulates that free trade leads to the first best or most efficient utilization of world resources in the strict sense of Pareto optimality. Before 1950, it was widely believed that the conformation of regional trading blocs, such as customs unions, represented the second best welfare position (if the free trade Pareto-optimal first best position could not be reached, Klein and Salvatore, 1997). In this sense, the conformation of regional trading blocs would benefit member nations from the increased specialization in production and trade, while non-members would benefit from the spillover effects from the higher growth of members. In 1953, Viner showed that a customs union could increase or reduce the welfare of member

nations and of the rest of the world depending on whether the customs union led to trade creation or trade diversion.[2] Meade (1955) extended the theory of customs union in 1955 and showed that when substitution in consumption as well as production is considered, even a trade-diverting customs union could lead to increased welfare for member and non-member countries (Klein and Salvatore, 1997). Finally, Lipsey and Lancaster (1957), and Lipsey (1961), generalized the theory of the second best, and they summarized a set of conditions that were more likely to lead to increased welfare. Taken from Salvatore (1997, p. 305), these conditions are:

(1) The higher are the preunion trade barriers of member countries, then there is a greater probability that formation of the customs union will create trade among union members rather than divert trade from nonmembers to members; (2) The lower are the customs union's barriers on trade with the rest of the world, then this makes it less likely that formation of the customs union will lead to costly trade diversion; (3) The greater is the number of countries forming the customs union and the larger their size, then under these circumstances there is a greater probability that low-cost producers fall within the union; (4) The more competitive rather than complementary are the economies of member nations, then there are greater opportunities for specialization in production and trade creation with the formation of the customs union. Thus, a customs union is more likely to increase welfare if formed by two competitive industrial nations rather than by an industrial nation and an agricultural (complementary) nation; (5) The closer geographically are the members of the custom union, then transportation costs represents less of an obstacle to trade creation among

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[2]Trade creation occurs when some domestic production in a nation that is a member of the custom union is replaced by lower-cost imports from another member nation. Assuming that all economic resources are fully employed before and after formation of the custom customs union, this increases the welfare of member nations because it leads to greater specialization in production based on a comparative advantage. Trade diversion occurs when lower-cost imports from outside the customs union are replaced by higher cost imports from a union member. This results because of the preferential trade treatment given to member nations. Trade diversion, by itself, reduces welfare because it shifts production from more efficient producers outside the customs union to less efficient producers inside the union. Thus, trade diversion worsens the international allocation of resources and shifts production away from comparative advantage (Salvatore, 1998).

members; (6) The greater is the preunion trade and economic relationship among potential members of the customs union, then this leads to greater opportunities for significant welfare gains as a result of the formation of the customs union.

According to these conditions, the reasons for the economic success of the European Union are that the nations forming the EU satisfied fully some of the conditions mentioned above. That is the participating countries were more competitive than complementary, were closer geographically, and had higher levels of preunion trade.

Socioeconomic Adjustment to a Free Trade Agreement

The road to specialization discussed before, is a process demanding institutional changes, economic restructuring, and social adjustments in order to become a reality. The problem is that these three different aspects have different economic dynamics. Institutional change shifts faster than the other two. In this sense, its implementation usually generates a "gap" with economic reality which in turn could materialize, in time, in social disturbances and major long-term economic disequilibriums.

To predict economic changes in an evolving society is something doable by economists given that there exists theoretical and methodological frameworks and economic indicators which allow them to discern future economic trends. The prediction of social and cultural change, however, is something more complicated and is something to which economists are usually not accustomed. Indeed, by assumption, economists usually do not pay attention to these issues. They also do not usually interact with sociologists, anthropologists, and other social science specialists. Economics usually overpowers social issues. Social and cultural issues, however, play a very relevant role in the economic

structural change expectations. Literacy and education levels of the labor force, family integration, levels of politization of the society, levels of democracy, religion, consumption habits, among others, are all issues embodied in formal and informal institutions that challenge the feasibility of the new economic strategy. To ignore the real impact that these issues have on the economy represents a major mistake.

The road to specialization demands that the state respond in a timely manner to these socio-economic needs. To not respond implies that the government is moving in the wrong direction. It also demands from professionals of the economic and social sciences to perform economic analysis where qualitative variables can be included as explanatory variables.

To best confront the lag between structural adjustment economic policy and the necessary socio-economic adjustment, the government will need to rely on both economic and social science assistance for research and analysis.

Summary

Free trade agreements are a fundamental component of Mexico's trade policy in recent years. The signature of these agreements reflects the government's view that the multilateral system presently affords fewer opportunities for advancing liberalization at the pace and depth that Mexico would wish. This strategy, however, has to be weighed carefully against potential social and economic costs. The internal economic restructuring process associated with it generates the bankruptcy of many small and medium sized enterprises as well as increasing input surpluses, mainly labor force, which has found serious employment

difficulties in other sectors of the economy. To continue sponsoring the conformation of regional trade arrangements without a clear idea of the natural dynamics that the internal components of the economy embody, could lead to social upheaval and the violence which often accompanies it.

CHAPTER 4
THE MEXICAN ECONOMY, 1940-1997

National Gross Domestic Product (GDP)

As expressed by the GDP growth rate trend for the period 1940-1997 (shown in Figure 4-1) the Mexican economy has grown and changed over time. Total production of goods and services grew by nearly 5 percent per year on average during the period 1940-1980. During the 1980s and 1990s, however, the growth rate has declined significantly.

Economic growth, in Mexico is not smooth. In almost every year during the 1940s to the 1970s there were significant economic fluctuations around the upward path. Several years from the 1980s and 1990s, the growth rate has been negative. The decline of GDP growth rate has implied that production fell and unemployment and poverty rose sharply.

A description of the most important macroeconomic variables of the Mexican economy for the period 1940-1997 will be accomplished in this chapter. Special attention will be paid to the last fifteen years, a period during which the opening of the Mexican economy has taken place. To start, an introductory description of the national GDP will be made in order to identify several possible points of interaction between the economic sectors that conform its structure.

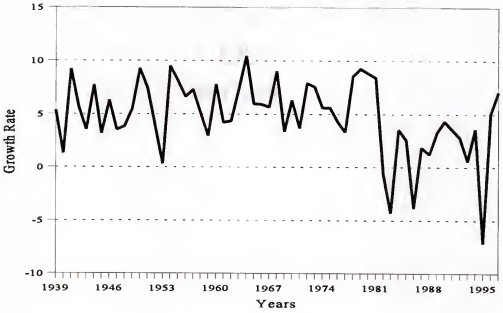

Figure 4-1 GDP Growth Rate in Mexico, 1940-1997.
Source: computed from Nafinsa (1996 and 1997).

The relative share of each sector to the total national GDP, shown in Figure 4-2, reveals important changes in the Mexican economy.[1] From 1960 to the early 1990s, the relative share held by the primary sector has become smaller over time, the secondary sector has maintained a more or less constant relative share, and the tertiary sector has gained the relative share lost by the primary sector.

[1]The economy is usually divided into three economic sectors or types of economic activities: primary sector, which is engaged in the exploitation of the earth's resources and includes agriculture, forestry, fishing, mining, and quarrying. The output from this sector, in the form of commodities and raw materials, often becomes the input for the next sector. The secondary sector, which includes manufacturing, construction, and utilities, and involves transforming the primary products into usable goods. Value is added in each successive process. The tertiary sector, which provides services, often intangible in form, to other producers (producer services) and the general public (consumer services). This sector involves a wide range of functions, from wholesaling and retailing to the provision of business, personal, and entertainment services (Healey and Ilbery, 1990).

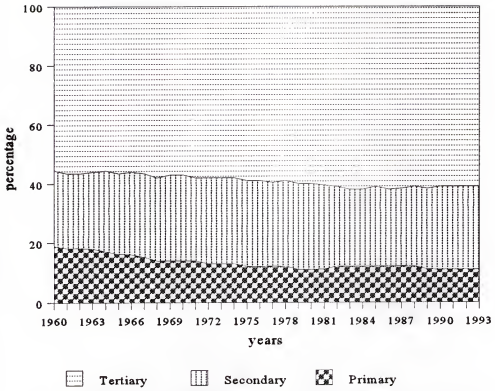

Figure 4-2 Mexico: Real GDP Share by Economic Sectors, 1960-1993.
Source: computed from INEGI: *Sistema de Cuentas Nacionales de Mexico*, several issues.

The relative share of labor force employed by the economic sectors in the country is presented in Figure 4-3. From this graph we can see how the primary sector has become less important in terms of employment generation over time and particularly in the 1960 to 1990 period . The secondary sector kept a constant relative employment share until the early 1980s. After that year, it has shown an increasing trend in its relative share as a result of the impressive expansion that maquiladora industry has had since then. According to Nafinsa (1996), the maquiladora industry employed a total of 119,546 workers in 1980, while in 1994 this number increased to 580,579 workers. That is, this activity has shown an employment growth rate of some 12 percent per year on average, during this period.

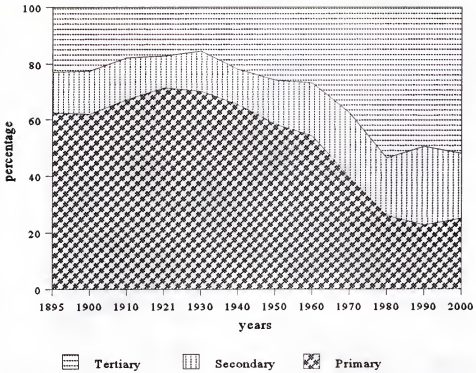

Figure 4-3 Mexico: Employment Share by Economic Sector, 1895-2000.
Source: computed from INEGI: *Sistema de Cuentas Nacionales de Mexico*, several issues.

Traditionally, maquiladora industry was located on border states, mainly in those states bordering the United States; however, in recent years it has expanded its location into the country, including non border states. However, the tertiary sector has been the most dynamic sector in terms of employment generation given that it has absorbed the labor force surpluses generated in particular by the primary sector.

From analysis of these two figures arise the following comments: (1) the share of the labor force employed in the primary sector in Mexico has declined significantly along with its contribution to total GDP. However, the decline observed GDP share produced by the primary sector has been less significant than the decline in the share of labor force employed in this sector. In this sense, one expects that per capita income has increased in relative terms

in Mexican rural areas, given the high level of migration registered from rural areas to urban areas; (2) the amount of labor force employed in the secondary sector has kept a constant share over time. A similar trend in the volume produced by the sector to the national GDP is observed. In this sense, we can argue that in general no major relative changes have occurred in the Mexican secondary sector in terms of per capita income and employment. At the same time, this sector is not being called upon to make a major contribution to economic development in Mexico which is contrary to conventional expectations; (3) the amount of labor force employed in the tertiary sector has grown significantly after the early 1960s. However, the relative share of the this sector with respect to the national GDP has shifted only from 0.56 percent in 1960 to 0.61 percent in 1993. That is, the real contribution of the tertiary sector to the national GDP increased by only 0.5 percentage points during thirty three years while the employment share nearly doubled. In this sense, we can expect that per capita income has been decreasing steadily in the tertiary sector given the continuous migration of rural population to urban areas; (4) the labor force employed in urban centers is mainly divided between very large and very small firms, with a relatively small proportion of workers (roughly 18 percent) in medium sized firms[2] (Ozorio de Almeida et al., 1995). Almost all the very large firms and some of the medium and small- sized firms constitute the production base of the secondary sector, while almost all of the small firms and a few of the medium and very large sized firms constitute the production base of the tertiary sector. The division of

[2]The firm size is determined taking into account the number of workers employed by the firm. In this sense, a small firm is one employing between 1 to 5 workers; a medium size firm is one employing between 6 to 50 workers, and a large firm employs more than 50 workers.

the urban labor force into very large and very small firms has become increasingly striking, as large firms have given way to small;[3] (5) productivity, wages, and working conditions between large firms, contrast with those found in small firms. The many disadvantages which constrain production and sales in small firms, including diseconomies of scale, higher prices for inputs, lack of access to credit, and limited capital accumulation keep wages low and working conditions precarious in the small firm sector; (6) the tertiary sector, since it contains a major share of the population, should be the sector creating demand for the production coming from the other two sectors. Given the conditions prevalent in this sector, however, the domestic demand desired of this sector for purposes of sustained economic development is still lacking; (7) the population remaining in the primary sector mostly consists of old and young males and females. Higher productivity males are engaged elsewhere in the national economy or migrate to opportunities outside the country. In this sense, predicting trends in economic variables such as productivity, wages, investment, capital accumulation, and others in the primary sector are uncertain tasks. Adding to the primary sector's production disadvantage is normally low income-elasticity of demand for its primary goods.

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[3]The trend toward employment in small firms is driven by several forces. For example, increasing competition, unleashed by free-market reforms, has driven many companies to downsize and replace in-house production with subcontracting arrangements with smaller firms. Employment in small firms is reinforced by sectoral shifts in total employment toward those sectors in which small firm employment is common, specially "services and commerce" (Ozorio de Almeida et al., 1995).

Import-Substitution Industry (ISI)

From the 1930s to the early 1960s, a growth strategy known as import substitution industrialization (ISI) dominated economic planning in Latin America. The reason is that during this period, these countries experienced a decline in world markets for their primary products and growing balance of payment deficits on their current accounts. In general, it was argued that there is a structural tendency for the terms of trade of developing countries to deteriorate because of the concentration of their exports in primary commodities (this is known as the Prebisch-Singer hypothesis, Cardoso and Helwege, 1993). According to the then leading exponents of development theory, the domestic market represented a stronger and a more stable basis for growth than the international market, as the latter had become increasingly unfavorable for developing countries. In this sense, these two premises became the driving force of ISI: industrialization was necessary for economic development, and a developing country could industrialize only if it kept out competing imports (Weintraub, 1997). Outward-oriented growth was therefore dismissed and, given a general belief in the magic of industrialization, trade policy was turned to an import substitution strategy of urban industrial development. In this sense, ISI was not only to protect existing firms but to establish new industries (infant industries).

The main tools used by the government to implement an ISI strategy were import licensing arrangements, tariffs, overvalued exchange rates, government tax incentives and subsidies, direct government investment in key industries, and the provision of public

services including electric power, roads, communication systems, and fuel at subsidized prices (Looney, 1978). Import licensing enabled the government to control the composition of imports in order to promote specific activities. Essential goods -mainly food, capital goods, and intermediate inputs- were given preference, while imports of final consumer goods were discouraged with administrative red tape. Essential goods entered under lower tariffs and at preferential exchange rates. Multiple exchange rate systems served as an important mechanism for subsidizing favored goods.

Governments stimulated industry through low interest rates and easy access to credit under soft monetary regimes. Publicly owned enterprises subsidized intermediate goods such as electricity and steel. Price ceilings on wage goods, especially food, helped to keep down labor costs for urban employers. Governments also constructed plants in heavy industries such as steel, cement, airplanes, etc. where the high capital requirements were thought to discourage private investment. At the same time, new plants in automobiles, pharmaceuticals, grain processing, etc. were set up as joint ventures with foreign firms (Cardoso and Helwege, 1993). The construction of industrial parks was strongly supported as a way to promote regional economic development.

The Performance of Mexican Economy

Between 1910 and 1925 the devastation that the Mexican Revolution unleashed on the country seriously affected the economy. It is not until the 1940s, after three decades of revolution, depression, and institutional reforms, that the economy begins to grow at a fast pace. Economic policy in Mexico followed the prevailing Latin America model of import

substitution. The industrialization process initiated in this period resulted in rates of economic growth that few countries in the world, developed or underdeveloped, have been able to record (Table 4-1). The period that runs from 1940 to 1970 is commonly seen as Mexico's takeoff toward industrialization and can be divided into two very well-defined stages. The first stage extends from 1940 until the late 1950s and is marked by high economic growth, high inflation, recurrent devaluations, and an expansive monetary policy used to finance the nation's economic development. The second one, known as "stabilizing development", is marked by a set of policies which were oriented toward greater macroeconomic stability (Enriquez, 1988). Each stage was characterized by different macroeconomic management strategies, but their trade regimes were essentially identical. The overview of these stages will be brief since the literature on these topics is already extensive.

As seen in Table 4-1, the first stage was characterized by strong economic growth (6 % in average annual rate until 1955) and a significant level of inflation (12 % annual average for the period). During this stage, the government undertook the challenge of investment relying on deficit financing of public expenditure in order to achieve growth. Public spending was mainly oriented to provide the infrastructure to eliminate bottlenecks that could inhibit the expansion of private investment. Moreover, through a combination of policies (tax incentives, subsidization of private industry through the underpricing of public services and the products of public enterprises outputs, tariff protection and credit) the government sought to encourage the growth of domestic industry to satisfy demands that had hitherto been met by imports (Looney, 1978). In order to stimulate even more domestic economic

growth, the government made use of foreign borrowing. Indeed, a secondary, but nonetheless very important financial variable in this type of economic strategy, is the progressive and increasing access to foreign credit markets that served to help not only to finance public investment program but also to offset current deficits and short-term capital outflows. The constant recourse to higher levels of indebtedness, foreign and domestic, to offset disequilibria in the balance of payments, became a major problem in the following years as the country was forced to allocate proportionately larger resources to service the debt.

Table 4-1 Economic Indicators, 1940-70 (real average annual growth rates, 1960=100)

Concept	1941-46	1947-52	1953-58	1959-64	1965-70
Gross domestic product	6.2	5.8	6.8	6.7	6.8
Population	2.9	2.9	3.1	3.3	3.4
Per capita product	3.3	2.9	3.7	3.4	3.4
Industrial output[a]	6.3	7.2	6.6	8.9	8.7
Agricultural output[b]	4.6	5.6	6.5	6.2	3.3
CPI in Mexico City	14.2	9.9	5.7	2.3	2.8

a/ industrial output includes mining, manufacturing, construction, and electricity.
b/ agricultural output consists of crop production, livestock, forestry, and fishing.
Source: Ramirez (1989).

Deficit financing was severely inflationary. Between 1940 and 1954 the CPI in Mexico City rose at 12 percent per annum. It is important to mention here that, for the same period, the price level in the United States rose at 2 percent per annum. Then, considering that these two economies were closely linked through both trade and financial flows, then the widening gap between peso prices and dollar prices was reflected in pressures on the

exchange rate. As a result, the peso was devalued between 1948 and 1954 from 4.85 to 12.50 to the dollar (Looney, 1978).

The period that runs from 1960 until the late 1970s was characterized by low and stable ratios of public deficits and external debt to GDP, domestic inflation at international levels, positive real interest rates for asset-holders and a fixed nominal exchange rate (Gil Diaz, 1985). Because money supply growth was pegged to expected output growth, inflation was kept at a minimum and real interest rates were positive, and private savings grew notably. According to Gil Diaz (1985) the ratio of private savings to GDP grew from 10 percent in 1956-60 to 25 percent in 1966-70, thus enabling the government to fund its deficit through the banking system with few monetary or foreign debt effects. Moreover, the fiscal deficit was kept at the manageable average level of 1.6 percent of GDP during 1961-1970. In addition, the Central Bank followed a monetarist policy with respect to the balance of payments under a fixed nominal exchange rate. Incipient reserve losses were viewed as indicative of excessive money growth, which was remedied by a restrictive monetary policy (Zabludovsky, 1990).

The achievements of the period were considerable. Between 1950 and 1970 real gross domestic product increased at a rate of 6.7 percent per year on average (Table 4-1 and Figure 4-1). On a percapita basis, this translated into nearly 3.5 percent. Both agriculture and industry shared in this rapid advance. Agricultural production increased at an annual rate of 5.3 percent and manufacturing output at 8 percent. Among key sectors, steel production and electric energy expanded in an impressive manner (Looney, 1978).

The Collapse of Stabilizing Development

Despite the impressive economic indicators shown on table 4-1, the ISI strategy evidenced two major weaknesses at the end of the 1970s. First, given rapid population growth at an annual rate rising to 3.4 percent in the 1960s, economic expansion did not generate sufficient new employment opportunities to absorb the new entrants into the labor force. By the end of the 1960s, about 40 percent of the labor force was either unemployed or underemployed (Looney, 1978). Secondly, the rapid economic expansion, however, did not bring about a more equitable distribution of the benefits of growth. On the contrary, ISI led to a significant deterioration in the size distribution of income and wealth (Ramirez, 1989). The differentials between rich and poor, and between regions, were apparently growing.

In order to attack these problems, President Echeverria pledged to maintain the vigorous pace of the country's economic development within a context of price stability, but paying stronger attention to the needs of lower-income groups (the strategy was known as "shared development"). The strategy was designed to increase employment and improve income distribution by means of large increments in public spending. Fiscal restraint was abandoned.

The performance of Mexican economy under "shared development" began to weaken (Table 4-2). As a result of a highly participatory government, a rising public deficit resulted. Excessive spending pushed up inflation and as inflation increased, both real interest rates and financial saving declined. Moreover, the government resorted to foreign debt issues to

supplement public revenues. The public deficit problem worsened as the extensive price control programs of the stabilizing development stage were continued in spite of mounting inflationary pressures (Zabludovsky, 1990).

By the end of 1976, the Mexican economy confronted a situation of low output growth, increasing inflation, rising international debt, an overvalued currency, and a major balance of payment problem. The peso was devalued and the next administration was forced to enter into a standby agreement with the International Monetary Fund (IMF) and to implement a major macroeconomic adjustment program. In words of Looney (1978) the period 1971-1976 may be considered a period of "destabilizing development" rather than a period of "shared development".

Table 4-2 Economic Indicators, 1971-76

Concept	1971	1972	1973	1974	1975	1976
Real GDP growth rate	4.2	8.5	8.4	6.1	5.6	4.2
Rate of inflation[a]	4.4	5.5	12.3	24.2	16.6	19.6
Money supply (M1) growth rate	8.4	21.1	24.3	22.0	21.3	30.1
Real interest rates[b]	4.6	3.5	-2.7	-14.0	-6.4	-10.2
Public sector deficit[c]	2.5	3.8	5.1	5.5	8.5	9.9
Foreign long-term public debt[d]	4.2	4.8	6.0	8.1	11.6	15.9
Current account deficit[d]	-0.7	-0.8	-1.1	-2.6	-3.7	-3.1

a/ rates of GDP price deflator; b/ long-term financial bonds; c/ percent of GDP;
d/ billions of dollars.
Source: Ramirez (1989).

The Agricultural Sector

Agriculture has long been a significant sector in the Mexican economy in terms of output, employment, and trade. It currently accounts for around 7 percent of total GDP, and

a quarter of total employment (INEGI, 1996). It has been the major activity in rural areas in terms of employment and income generation.

The structure of agriculture in Mexico has been strongly influenced by the post-revolutionary system of land re-distribution and the set of agricultural policies put in motion through time. For example, the agricultural strategy during the postwar period was characterized by heavy public investment in irrigation projects that benefited the agribusiness sector in the agricultural districts of the north west. The modern capital-intensive farms of this sector concentrated primarily on the production of grains for animal consumption, as well as the production of tradeables. Meanwhile, the majority of Mexico's small private farmers and ejidatarios -who specialize in the production of foodstuffs for internal consumption- received minimum support in terms of access to credit, technical advice, and provision of adequate water supply systems.

During the 1945-65 period, this kind of strategy generated rates of agricultural production growth of 5.7 percent on average (Table 4-1), unfortunately with a small proportion of the rural population participating in this growth. According to Hewitt de Alcantara (1975, p. 175), by 1970 "as many as 81 percent of all smallholding contributed a scant 3.6 percent of national agricultural production, while 3.3 percent of the largest commercial farms produced 81 percent of total output".

The low levels of production and income contributed to increased underemployment rates in the countryside, with estimates for the late 1960s ranging between 35 and 45 percent of the total rural labor force (Ramirez, 1989).

Nutritional standards also fell for the rural and urban poor. Indeed, according to the Mexican National Institute of Nutrition, in 1979 half of the population had a food intake that was clearly insufficient and inadequate, while one fourth of the total population suffered severe malnutrition (Esteva, 1987). Furthermore, the governmental policy of maintaining fixed prices for major staple foodstuffs during the 1960s and 1970s, contributed to the erosion of the rural poor's income. From 1963 to 1972 the government kept guaranteed corn prices constant in spite of high inflation rates; bean prices were not increased between 1961 and 1973, and wheat prices were held constant for 17 years (Ramirez, 1989).

By the end of the 1970s, the structural imbalances generated by this pattern of agricultural development had exhausted the agricultural sector's capacity to meet the basic food requirements of the country's growing urban population. Mexico's economic status shifted from a net exporter of agricultural products to a net importer of basic foodstuffs such as corn, wheat, and even beans, resulting in an agricultural trade deficit. In this sense, the decade of the 1980s started with the Mexican agricultural sector immersed in a major agricultural crisis.

The End of ISI

By the mid 1970s, the ISI had shown exhaustive signs, but the oil bonanza of those years gave it a new life. Indeed, the sharp increase in oil prices in 1973-74, as well as the discovery of new oil fields in southeast Mexico, generated significant additional export revenues for the Mexican government from the state owned oil industry. Supported by oil exports, Mexico contracted an enormous international debt, in order to support an

expansionary macroeconomic policy (Figure 4-4). At the end, this policy created large fiscal deficits and generated large capital inflows and an overvalued currency (Enriquez, 1988).

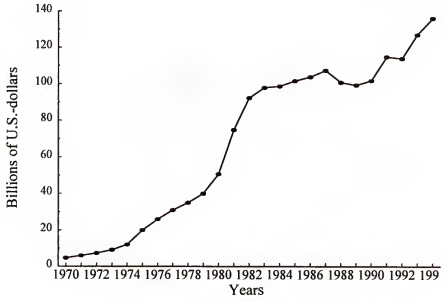

Figure 4-4 Mexican Foreign Debt, 1970-1994.
Source: computed from Nafinsa (1996).

By the early 1980's the world economic conditions and perceptions in international capital markets changed significantly. World interest rates started rising and international oil prices fell, bringing as a consequence, the flight of capital to foreign markets. This situation quickly turned into a foreign exchange run from Mexico and a significant economic crisis. In August 1982 the Mexican government announced that it could not meet scheduled debt payments. Mexican currency devaluation was inevitable once again. By then, Mexico entered what was to become one of the darkest periods of its contemporary history. Inflation was out of control, interest rates skyrocketed, and the gross domestic product (GDP) reached negative growth rates. This period (1982-1989), known as the "lost decade", represented

the failure of the inward-looking state centered development strategy (ISI). In order to surpass the economic crisis, Mexico was forced to adopt a new strategy where markets, not states, were the engines of growth. A new story began to emerge in Mexico's contemporary economic history.

Toward Export-Oriented Industrialization (EOI)

By the early 1980s the import-substitution industrialization strategy fell apart. Once the crisis became evident the Mexican government was forced to implement a new economic strategy, focused in the external sector, to restructure its economy. This adjustment process took place primarily in two stages. First came stabilization, an attempt to deal with macroeconomic crisis and instability, usually through substantial devaluations and cuts in government expenditures. Secondly, the setting of structural reforms followed, involving a change in the development paradigm, including liberalization of markets, reduction of trade barriers, and privatization of economic activities (Morley, 1995; Bradford, 1994). These reforms aim to achieve higher levels of production and productivity, to open the countryside to domestic and foreign private investment, to orient the agricultural apparatus towards open and competitive markets, to raise income and welfare levels in rural society, and to reduce the intervention by state agencies in rural development (Moguel and Bartra, 1995; Gutierrez, 1995). This strategy of economic development was known as export-oriented industry (EOI), and international financial institutions such as the World Bank and the International Monetary Fund (IMF) became its main sponsors.

The most salient features of this new strategy were just the reverse of those of its predecessor. The economy was opened to foreign competition by means of substituting tariffs for import permits, reducing tariffs and making them more uniform, eliminating official prices and simplifying the regulatory framework applicable to foreign trade transaction. Moreover, on January 1, 1994, the North American Free Trade Agreement (NAFTA) came into effect, and several commercial treaties and agreements have been negotiated with other countries.

Macroeconomic Stability

A nominal exchange rate anchor was a central element of the Mexican macroeconomic stabilization program (Figure 4-5). From March to May of 1988 the exchange rate was pegged to the dollar as part of a package of anti-inflationary measures. While by 1989 exchange rate policy had moved to a crawling peg, the nominal exchange rate remained a stabilized price in the economy. From the beginning of 1991 to the end of 1993, the nominal

exchange rate began a preannounced currency depreciation of 1 peso per day versus the U.S. dollar, because it was showing signs of overvaluation (Otero, 1996). According to Huerta (1994), such depreciation was lower than the difference between internal and external relative prices, which eventually led to the overvaluation of the exchange rate. The nominal exchange rate depreciation in this period was of only 5.4 percent. While the exchange rate could be stabilized quickly, the inflation rate had much greater inertia, despite the presence of significant wage and price controls through the economic pacts.

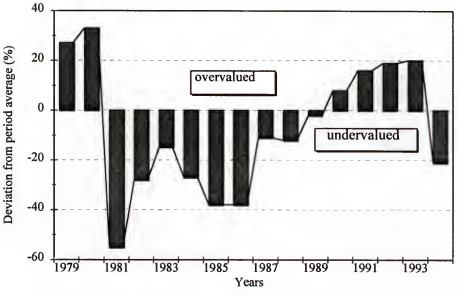

Figure 4-5 Real Exchange Rate, 1978-1994.
Source: computed from Nafinsa (1996).

From the beginning of 1991 to the end of 1993 Mexican wholesale prices rose about 30 percent relative to U.S. wholesale prices. The combination of a stabilized exchange rate and the increasing inflation (Figure 4-6) produced a real appreciation of the peso. According to Cohen (1995), the Mexican peso became overvalued in 1991. By the end of 1994, Cohen estimated that it was overvalued by 20 percent. After the December 1994 devaluation, the peso was undervalued by 21 percent (based upon a purchasing power parity index (PPP) with 1976 as base year). Despite that, in the opinion of the World Bank (1996), after 1988, Mexico was perceived as having successfully stabilized its economy, and the credibility of government reforms was higher.

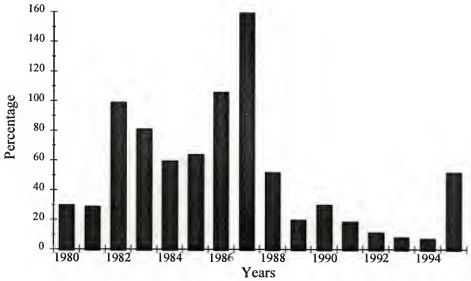

Figure 4-6 Inflation Rate in Mexico, 1978-1995.
Source: computed from Nafinsa (1996).

Liberalization

In 1982 Mexico started the import liberalization policy and the elimination of official import prices. By the end of 1985 input licenses were replaced by tariffs, only 2 percent of imported items were subject to licenses. Before then, all imports required prior government permits and were subject to a top tariff of 100 percent and an average tariff of 27 percent. However, the opening of the economy was initially formalized when Mexico joined the General Agreement on Tariffs and Trade (GATT) in 1986. The pace of liberalization was accelerated in 1987 and by 1990 no permits were required for most imports, and the highest tariff was 16 % with an average of 11 % (Urias Brambila, 1993). Moreover, NAFTA reduced

even further the tariff levels with Canada and the United States. Most of these reductions were at the product level (SECOFI, 1993).

Deregulation

A massive program of deregulation and reregulation has been undertaken. Indeed, major reforms in regulations have been instituted in price policies, subsidies, banking and finance, transportation, insurance, packaging, customs, petrochemicals, sugar, cocoa, and direct foreign investment. The crisis of the import-substitution industrialization strategy left Mexico with a set of non-competitive official prices in basic crops including corn, sugarcane, and wheat. Subsidies were provided on official agricultural credits for the production of these crops, and a high government expenditure was incurred as a result of consumer subsidies for corn, wheat, and sugar. Luiselli (1987) notes that in 1982 the general subsidy for corn, wheat and sugar consumption was 15 times more costly than all subsidies for the production of these three products. The shift in policy involved sharply declining public support for producers and increasing dependence on the international market. In this sense, from 1987 until the present, grain producers saw the level of support prices and input subsidies drop significantly and the national grain market was increasingly opened to competition from foreign producers (Hewitt de Alcantara, 1996). The idea was to create a more "modern" institutional structure, less dependent upon paternalistic or clientele relations, and more related to the external sector. During these restructuring efforts, some official agencies and programs were eliminated and others were reformulated.

Industrial growth and restructuring between 1983 and 1988, in the early period of adjustment, was largely based on exploiting the changes in relative prices brought about by deep devaluations in real exchange rates. These relative price changes enabled a rapid rise in the export of manufactures, but mainly reflected a switch of the output by existing production capacity from domestic to foreign markets without any significant changes in the capacity itself. Due to high interest rates, investment in the economy fell sharply during this period. After 1988, when Mexico was perceived as having successfully stabilized its economy and confidence in government reforms was higher, a large inflow of risk capital seeking equity investment in Mexican industry took place. Domestic investment in industry also picked up considerably. According to the World Bank (1996), a large proportion of investment went into the restructuring and technological upgrading of existing capacity during this period.

Financial institutions played a key role in restructuring projects. They negotiate with enterprises the financing conditions of the restructuring operations (including financial restructuring and new loans), and have an interest in promoting sound projects. Prior to 1988, the government dictated loan portfolios, interest rates, and liquidity requirements. Banks were used as a means of a rising capital for the government via increasing reserve requirements at the Central Bank, whenever new government financing was needed. As a result, there was little private financial intermediation. According to the World Bank (1996) three fundamental activities characterize this transition period: removal of constraints to genuine restructuring, formulation of new policies, and the build-up of institutional capabilities. In this sense, the Mexican government privatized commercial banks, redefined

the functions of the central bank and set new support legislation. The nominal interest rate was liberalized but the risk factor premium was kept high in order to attract foreign investment. As a result, high absolute and real interest rates have been able to attract foreign investment (Figure 4-7), but domestic investments have declined significantly. However, external capital inflows have allowed for maintaining the economy at relatively stable level.

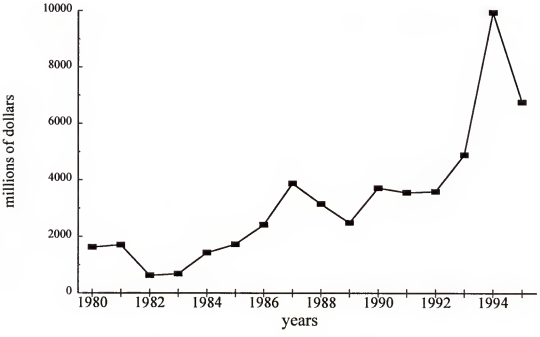

Figure 4-7 Foreign Investment in Mexico, 1980-1995.
Source: computed from Nafinsa (1996).

A new law regulating foreign investment was enacted in 1989 to permit 100% foreign ownership of companies in most sectors of the economy. Because attracting new foreign capital is a central piece of these reforms, further deregulation of direct foreign investment was enacted in December 1993 in preparation for the start of NAFTA (Otero, 1996).

Foreign investment became the main financing source of the new export-oriented model. Up to 1972, the law to promote Mexican investment and to regulate foreign investment gave the government the discretionary power to determine in which activities and sectors up to 51% of ownership had to be national. These conditions were substantially changed in 1989, and the reform primarily addressed small and medium-sized firms. It permitted an automatic 100% share of foreign capital if foreign investment could show a positive balance in their current account for the first three years, guarantee employment and abide by environmental protection laws. The decree of December 1993 further increased the range of activities for foreign investment in Mexico. Only thirteen activities were exclusively reserved to the state and six to Mexican investors. Finally, NAFTA significantly changed investment-related issues. Each nation must treat foreign investors and their investments no less favorably than national investors (Hufbauer and Schott, 1993; SECOFI, 1994).

Foreign investment flows to Mexico have been significant since 1982. Adding up the numbers for 1982-1994, foreign investment accumulated a total of 49 billion pesos and evolved as the main source to finance Mexico's current account deficit (SECOFI, 1994). Various other types of economic deregulation -such as modernization of custom measures, ports, and railroads as well as creation of information services regarding foreign markets and commercialization- emerged as the center of the new industrial strategy (Perez Motta, 1991).

Privatization

The use of substantial portions of external debt to liabilities of state-owned enterprises and the fact that significant portions of government budgets were devoted to paying subsidies or assisting loss-making state-owned enterprise during the ISI period, brought as a consequence increasing current account deficits (Figure 4-8). In this sense, efforts to stabilize fiscal and current account balances, and reduce inflation rates appeared as prior conditions in order to stimulate economic restructuring. And in this context, privatization of state-owned enterprises, which began in 1983, was aggressively reinforced after 1989. Before 1982, the government had been actively involved in the economy through state enterprises set up to meet multiple goals such as infrastructure improvement, import substitution, regional development, and job creation. In 1982, there were nearly 1,200 state enterprises, in almost every sector of the economy. They received subsidies and transfers equal to 12.7 percent of GDP, produced 14 percent of national output, employed 4.4 percent of the labor force, and accounted for 38 percent of fixed capital investment (World Bank, 1997). By the end of 1993, the government controlled only 210 enterprises.

The privatization program was implemented in three stages. Between 1983 and 1985, non-viable and non-priority firms, most of them small, were liquidated or merged. From 1986 to 1988, the government focused on selling medium and small companies, particularly in non-controversial areas. The privatization of major public companies started in 1988. The two most important airlines AEROMEXICO and MEXICANA, were sold in the 1989-1992 period. The telephone company, TELMEX, sold in 1991-92, represents one of the largest

privatization operations in the world. The privatization of 18 banking institutions was concluded in 1992.

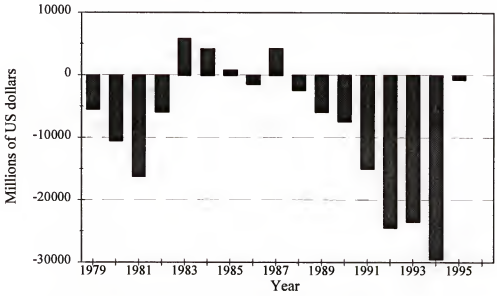

Figure 4-8 Current Account Balance, 1979-1995.
Source: computed from Nafinsa (1996).

Privatization was not only important to increase the role of the private sector in the economy, but it also became a strong source of revenue for the government, which accumulated $23.7 billion for the period 1989-1993. Privatization of commercial banks and TELMEX accounted for 78.1 percent of total government revenue in this period (Otero, 1995). By 1994, the government had sold around 80 percent of its enterprises (Ceballos, 1997).

The current administration is implementing what could be considered as the fourth stage of the privatization process. In this stage, the government intends to structurally transform the economic sectors that produce goods and services not tradable internationally. These sectors are railroads, seaports, airports, telecommunications and petrochemicals.

A distinctive characteristic of these sectors is that they possess a high level of industrial concentration. Therefore, their transformation has required a restructuring and deregulation process in order for them to operate competitively. In some cases, modifications to the legal and regulatory frameworks have been required to allow for private investment, to protect the public investment, and to promote economic efficiency.

Agricultural Reforms

For many, the greatest change occurred in the agricultural sector. Indeed, in this sector reforms included: 1) elimination of most food and agricultural input subsidies, and food price controls; 2) opening of markets, including elimination of most tariffs and allowing private firms to import food and feed; 3) the privatization of credit and technical assistance, and 4) the change of the agrarian law by rewriting Article 27 of the Mexican Constitution, which was left untouched from 1917 until 1992 (Salinas de Gortari and Solis, 1994).

Conditions of land tenure set the context within which all efforts to raise agricultural output must operate. The system of land tenure in Mexico is governed by the agrarian law. This law recognizes three different forms of land tenure: private, public, and social. Social property was further subdivided into communal and ejido lands [4]. Private lands were worked

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[4] *Ejido* is a landholding peasant community. The land is owned collectively by the members of such a community. An *ejido*, according to the Mexican Agrarian Law, is a legal entity of the "social interest sector", and its jurisdiction is in the hands of Mexican-born peasants. Its holdings consist of the *ejidal* plots, i.e., individual farming plots, the school plots, the *ejidal* urban areas, the house and annexes to each plot, and any water resources and forest areas associated with the community. Two basic kinds of *ejido* exist: the "individual" *ejido*, in which land tenure and ownership are legally vested in a community but cropland is allocated by plots (*parcelas*) in a semipermanent basis among the individual *ejido* members; and the "collective" *ejido*, in which land resources are

by owners, sharecroppers, and landless peasants; social lands were worked by colonos (settlers) or members of ejidos, known as ejidatarios. The ejido is a form of land tenure where the beneficiaries (ejdatarios) have the right to use the land. However, since land belonged to the state, ejidatarios could not sell or rent it. In 1992, agrarian legislation was changed, the reform of land tenure established a new framework for property rights. The new legal order is represented by the January 1992 amendment of Article 27 of the Constitution and the February 1992 Agrarian Law (the implementing legislation for the modified Article 27) (Gaceta de Solidaridad, 1991). These reforms, all of which are generically termed "reform of the countryside" or "rural reform," aim to modernize the rural sector by creating a system of legal guaranties that can give security to property rights in agriculture (Salinas de Gortari and Solis, 1994). They aim to achieve higher levels of production and productivity through the establishment of property rights, to open the countryside to domestic and foreign private investment, to orient the agricultural apparatus towards open and competitive markets, to raise income and welfare levels in rural society, and to reduce and make more selective intervention by state agencies in rural development. By allowing farmers better access to credit, the land reform also expects to contribute to the consolidation of small plots into viable farms.

The rural reforms also attempts to provide the producers in the social sectors - ejidatarios and comuneros- with the ability to exercise greater decision making power within their own economic and social space, basically in questions related to land tenure and the

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pooled for collectively organized production. In this case *ejido* is named "agrarian community".

organization of production (Salinas de Gortari, 1988). In a move toward socioeconomic empowerment, the reform recognizes for the first time the ejidatarios' legal standing as proprietors with full rights to the land that they have received, putting an end to the ambiguity in the earlier legislation regarding their status as proprietors or mere usufructuaries of the land. In this manner, the ejidatarios assembly is plenty empowered to decide the use and the forms (individually or collective) of production/exploitation of the land in question, as well as the eventual transformation or termination of the ejido regime (Article 23 of New Agrarian Law). With this law, the traditional tutelage of the state over rural society is broken, restoring control over social and productive processes to the campesino producers themselves.

The reform no doubt opens up the possibility for the privatization of ejido lands with the assignation of property rights to ejidatarios , but it also opens the doors to new modalities of association of the rural producers from the social sector (i.e. ejidos and agrarian communities) with other economic agents. If the experiment works well, the reform should lay the basis for the capitalization and productive reactivation of the campesino economy and the ejido system (Salinas de Gortari and Solis, 1994).

1994, the Economic Crisis that Shook the Mexican Economy

The new economic strategy pursued by Mexico aimed to achieve macroeconomic stability and promote economic growth. The main elements of the strategy were the use of a predetermined nominal exchange rate anchor, supported by restrained fiscal and monetary

policies, to lower inflation; and a drastic program of structural reforms, described earlier, to promote greater and more efficient private investment, including attracting investment from abroad. In this sense, under this economic strategy the Mexican economy began to grow again in the early 1990s (Figure 4-1). Exports boomed while imports grew even faster, international capital returned with surprising speed, inflation fell continuously, and large fiscal deficits were eliminated. For some time the Mexican strategy appeared to be working. However, in December 1994 the Mexican economy again confronted a major crisis. Discussions about what went wrong are still taking place. Following are ideas on this subject: (1) In contrast to the flows of commercial bank lending in the early 1980's, much of the capital inflow in the 1990s was short term. For example, in 1993, the peak of the foreign-investment wave, 32% of foreign funds went into the stock market, and 13% took the form of direct foreign investment. Most of the rest went into short-term debt issued by Mexican commercial banks and the government. The problem with exchange rate pegging strategies is that if market forces pushing the exchange rate lower are sufficiently strong and persistent, the government's rate-defending asset sales will eventually exhaust its foreign exchange reserves (Whitt, 1996; Espinosa and Russell, 1996). This was precisely the situation that Mexico faced in the last two months of 1994, when the bottom dropped out the peso market. The exchange rate policy left Mexico increasingly at the mercy of volatile private capital flows. The flight of portfolio investment from Mexico drove a rapid and dramatic depreciation of Mexican currency. By early January, its dollar value was almost 40 percent lower than it had been in mid-December. This massive peso devaluation marked the beginning of a severe economic recession (Espinosa and Russell, 1996). (2) Institutional

change and economic adjustment are two aspects with different economic dynamics. Indeed, formal institutional change, based in policy reforms, shifts faster than economic adjustment. In this sense, desired simultaneous implementation of new policies often generates a "gap" with the economic reality which in turn can materialize in social disturbances and economic disequilibrium. For instance, macroeconomic liberalization resulted in an increase in manufacturing's imports, the overvaluation of the exchange rate, and a fall in manufacturing's exports, all of which produced a widening trade balance deficit (Figure 4-9). The impacts of these policies caused one of the most significant structural changes in Mexico's economy since 1988. Indeed, Mexico has changed its international trade status by switching from a net exporter country during the 1980s to a net importer nation in the 1990s. In words of Dussel Peters (1996), it resulted in a shift from export-oriented industrialization to import-oriented industrialization. (3)Trade and productive specialization patterns of manufacturing are strongly affected by macroeconomic adjustment. Rapid liberalization and overvaluation of the exchange rate will cause a fall in the price of domestic inputs, value added potential, and backward linkages. Land reform, for example, released greater amounts of the labor force from the countryside to other sectors of the economy, but these sectors remain unable to absorb these labor force surpluses. Overpopulation of big cities, unemployment and underemployment in urban areas, migration to other countries, and even revolution as in Chiapas, have been some of the results of the implementation of this economic strategy.

Presently in 1998, after two years of recession and instability, the Mexican economy is growing again in peso terms. Despite every Mexican worker taking a 50 percent pay cut

in world purchasing power terms, and inflation decimating the expanding middle class, and political instability on the increase, the Mexican government has not changed its mind with respect to the economic strategy. It considers that it is too early to determine that the strategy will not work well. In this sense, Mexico will continue implementing the reform with some partial support adjustments. This support includes not only defending past liberalization, but forging ahead with the unfinished business of privatization, deregulation and labor-market reform. The "market model" has survived a major crisis intact. According to the World Bank (1997) Mexico is moving in the right direction, but the work is still not done. The Bank has identified five strategic areas in which Mexico will pay close attention in the coming years. These areas are: (1) macroeconomic stability; (2) promoting quality investment in human development; (3) accelerating the region's financial development; (4) improving the legal and regulatory environment for private-sector development, and (5) enhancing public-sector efficiency and governance.

The panorama still looks complex and complicated for Mexico. Along with economic challenges, the country must also face political issues. Not only must Mexico continue to absorb the cost of transformation from a closed to an open economy, but it also must endure the pains of going from an authoritarian political system to a more democratic structure. Success in economic matters will depend on how successful Mexico will be in political terms as the country deals with a challenging socio-economic transition period. These economic restructuring processes are still evolving and their final outcome is unknown.

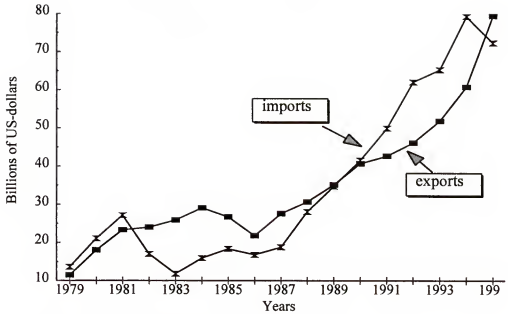

Figure 4-9 Goods Trade (F.O.B.), 1978-1995.
Source: computed from Nafinsa (1996).

Structural Change in the External Sector

The structural change measures implemented by the Mexican government over the past decade have influenced over a wide variety of economic activities and sectors. It is the external sector, however, where they have had more impact and their results are most evident. The external sector has experienced significant transformation in recent years as a result of openness of the economy. Some notable aspects of these structural changes in the external sector pointed out by the Bank of Mexico (1997) are listed below.

(1) A rapid expansion in the size of the external sector vis-â-vis the economy as a whole. That is, foreign trade represents a larger and growing share of the Mexican economy. According to national accounts data, Mexico's total foreign trade (measured as the sum of

exports and imports of goods and services, expressed as a percentage of GDP at 1993 constant prices) has risen sharply from 20.2 percent in 1985 to 29.1 in 1990, 39.3 percent in 1994, and 52.5 percent in 1996.

(2) Higher growth of non-oil exports, especially manufactured exports. The development of the Mexican export sector has meant a considerable expansion of manufactured merchandise exports and improvement in the country's international position, among primary exporting countries. Mexico went from 28th place in 1980 to 20th place in 1990, 18th in 1994 and 16th in 1996 as an exporter of manufactured products in the world. At the same time, Mexican manufactured exports rose from 37.6 percent in 1985 to 68.8 percent in 1990 and 83.7 percent in 1996.

(3) A greater diversity of manufactured commodities sold abroad coupled with a decline in the relative importance of exported raw materials (oil and mining products). The composition of Mexican exports has undergone a significant structural change, with exports of natural resources losing relative importance within total exports, and manufactured exports gaining in diversity and importance in the current account balance. Exports of oil dropped as a share of the current account balance from 55.2 percent in 1985 to only 12.1 percent of total exports in 1996, and the other extractive industries share of total exports declined from 1.9 percent in 1985 to 0.5 percent in 1996.

(4) A smaller participation of the public sector, as compared to the private sector, in total external transactions, both in the current account and in the capital account. The private sector has experienced a growing participation in balance of payments transactions, particularly in the current account. It increased passed from 56 percent in 1985 to 88 percent

in 1996, while the public sector decreased from 44 percent in 1985 to 12 percent of domestic GDP in 1996.

(5) Expanding the importance of direct foreign investment with respect to total investment in the Mexican economy. Direct foreign investment has been very dynamic in recent years. In 1985, it was $2.6 billion USD, while in 1996, it amounted $7.6 billion USD.

Undoubtedly, the Mexican economy external sector is perhaps where the structural change has been more evident during the last decade. Some of these changes are already bearing fruit while others are still at incipient stages.

Summary

Formerly Mexico's economic strategy to reach higher levels of economic development was under the influence of the ISI model for more than forty years. Many generations grew to maturity under this culture. In fact, most of the Mexican economically active and inactive population as well as its domestic business class are, in some sense, "educated" under the principles imposed by this model. The ISI strategy has left deep roots into the Mexican society which now appears as a major obstacle to surpass. The adoption of the new economic strategy is challenged every day by the past. The success of the new strategy will depend on how fast Mexicans will be able to abandon the bad habits inherited from the past and adapt their culture, tradition, and efforts to the new model. By nature, the external sector is more sensitive to the openness of the economy, but how long is the internal structural change going to last?

CHAPTER 5
GEOGRAPHIC AND SOCIO-DEMOGRAPHIC DELINEATION OF VERACRUZ

Introduction

While the North American Free Trade Agreement (NAFTA) brought a great deal of attention to the land border between Mexico and the United States, the Gulf border (defined by the Gulf of Mexico) is no less important to the country's global expectations. Recently, the Gulf Governors' Accord brought together the 11 states that share the Gulf of Mexico (Alabama, Florida, Louisiana, Mississippi, and Texas in the United States, and Quintana Roo, Yucatán, Campeche, Tabasco, Veracruz and Tamaulipas in Mexico), in order to foster deeper interaction and cooperation among the Gulf states. The interest areas included in the agenda were investment; tourism; agriculture and fishing; health and environment; education and culture; infrastructure and communication; and finance, trade and investment (Zaretske and Rosenberg, 1998). Participants in this Accord are concerned if the changes in the Gulf region brought on by NAFTA, as well as the globalization process in general, will create opportunities for greater trade, investment and infrastructure projects. If everything goes as expected, then these opportunities will reshape interactions and relations within the region and indeed other countries and regions of the world.

To the degree that Mexico has inserted itself in a more intense, permanent fashion in the international markets, the state of Veracruz has played a very relevant role. Veracruz is a rich state in terms of its natural resource endowments, its maritime port capacity, through its strategic position in the rapidly expanding Gulf of Mexico Basin economy, and other major elements of its basic infrastructure. The objective of this chapter is to describe the geographic, social and economic characteristics of Veracruz, as well as to identify the evolution of the most important economic variables in the NAFTA era.

Geographic Aspects

Territorial Extension and Location

Veracruz is located to the east of Mexico between parallels 17°09' and 22°28' North latitude and between meridians 93°36' and 98°39' West longitude. It covers an area of 72,815 square kilometers (45,247 square miles), an amount that represents 3.7% of Mexico's national territory. This makes Veracruz the eleventh largest state in the Republic of Mexico (Figure 5-1). It has a coastline of 684 kilometers (425 miles). The state is some 800 kilometers (500 miles) in length. Its width varies noticeably, from just 52 kilometers (33 miles) in the Martinez de la Torre zone to approximately 200 kilometers (125 miles) in the southern part of the state. Veracruz borders on seven other Mexican states: Tamaulipas on the Gulf of Mexico to the north; Tabasco, and Chiapas along the Gulf of Mexico to the east;

Chiapas and Oaxaca to the south; and Puebla, Hidalgo and San Luis Potosi to the west (INEGI, 1997).

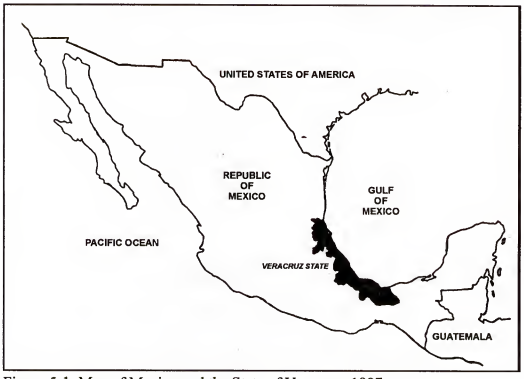

Figure 5-1 Map of Mexico and the State of Veracruz, 1997.
Source: Adapted from INEGI (1997).

Political Division

Veracruz is comprised of 210 municipalities. A municipality is the equivalent to a county in the United States. The majority of these municipalities can be found in the central region of the state.

Orography

Veracruz offers a rich and diverse geographic conformation, due primarily to the eastern Sierra Madre mountain range which spans the entire length of the state, at times

touching its coastal zones. The eastern Sierra Madre in the south, becomes the Tuxtlas Sierra. Towards the central part of the state, near the boundary with the state of Puebla, can be found some of Mexico's tallest mountains, such as the Orizaba Peak, which has an altitude of 18,700 feet above sea level and is Mexico's tallest mountain, and the Cofre de Perote, with an altitude of 14,049 feet above sea level. Both are inactive volcanoes and form part of the volcanic chain which crosses the entire country from east to west. The Huasteca mountain zone is located in the northern part of the state, as well as the mountain regions of Huayacocotla and Chicontepec.

Hydrology

Veracruz has some of the country's most important hydrological basins, derived from the rainfall and snow runoffs from the eastern Sierra Madre. As one direct result, close to 35% of Mexico's water supply is found in the state. The most important hydrological basins emanate from the Coatzacoalcos, Papaloapan, Panuco, Tuxpan and Antigua Rivers. A number of the rivers crossing the state are navigable by small craft. However, given the topographical conditions of the state only the Panuco can be used for hydroelectric power generation. The Panuco is the site for the state's most important flood control and irrigation dam and hydroelectric complex, the Chicayan. Veracruz, in addition to its rivers, is home to a number of important lakes, lagoons and reservoirs. One of these, Catemaco, is among the state's principal tourist attractions.

Climate

Veracruz enjoys a wide range of climates due to differing elevations and its location along the Gulf of Mexico. On the coastal plain and at the foot of the eastern Sierra Madre mountain range, the climate is hot and humid with abundant rainfall in the summer months. In the southeastern zone of the state, in the Tuxtlas region, the weather is semi-hot and humid with rainfall on a year-round basis. At the middle slopes of the mountains, temperate and wet climatic conditions prevail. In the higher elevation zones, small geographic areas with semi-dry and cold climates can be found (INEGI, 1997).

Sociodemographic Aspects

Mexico experienced dramatic population growth after the 1940s. Improvements in the coverage and delivery of health services contributed to the accelerating growth rate. High fertility rates continued into the 1970s, when the first official efforts to promote birth control measures were undertaken. Growth rates have only begun to decline since the 1970s (Table 5-1).

Total Population

The evolution of total population in Veracruz has been consistent with national data. It reveals a 2.23% annual growth rate for the period 1970-1998 (Table 5-1). The state's total population for 1998 is estimated at 7,071,555 inhabitants, an amount equivalent to 7.75%

of Mexico's total population. While the rate of growth in Veracruz is less than for the entire country over the 1970-1998 period, it exceeds the country for the most recent eight years.

Population by Age Groups

Accordingly with national data, the population of Veracruz consists basically of young people: 38.45% of the population is 14 years of age or younger; 35.25% is in the 15-34 age bracket, while the 26.3% is older than 34 years of age. This underscores the real labor supply and labor supply potential available in the state.

Table 5-1 Total Population Statistics for Mexico and Veracruz (1970-1998)

	Total Population				Average annual growth rate			
	1970	1980	1990	1998*	1970-1980	1980-1990	1990-1998	1970-1998*
National	48,225238	69,665120	81,249645	91,238962	3.75%	1.55%	1.46%	2.30%
Veracruz	3,815422	5,387680	6,228239	7,071555	3.51%	1.46%	1.59%	2.23%
Ratio	7.91%	7.73%	7.67%	7.75%				

*estimated
Source: INEGI (1974, 1984, 1994).

Urban and Rural Population

As a direct result of the development of the industrial and service sectors in the state, there has been an important migratory movement from rural to urban areas in recent years. Just as this migration has occurred, growing participation rates of workforce have been found in both the largest and medium sized cities across the state of Veracruz. As a result, Veracruz historically a rural state, is becoming an urban state (Table 5-2 and Figure 5-2).

Table 5-2 Urban and Rural Population in Veracruz (1960-1998).

YEAR	TOTAL	RURAL	%	URBAN	%
1960	2,728,000	2,103,288	77.1	624,712	22.9
1970	3,815,422	2,583,041	67.7	1,232,381	32.3
1980	5,387,680	3,394,238	63.0	1,993,442	37.0
1990	6,228,239	3,487,814	56.0	2,740,425	44.0
1998*	7,071,555	3,564,719	50.4	3,506,836	49.6

*estimated
Source: INEGI (1974, 1984, 1994)

Indeed, while the rural population has grown consistently, it has been decreasing relative to the urban population over the last 38 years. The annual growth rate of the urban population has been estimated at 4.6% in this period. The major urban areas in the state are the Veracruz metropolitan area, Xalapa, Cordoba, Coatzacoalcos, Orizaba, Minatitlan, Poza Rica, and

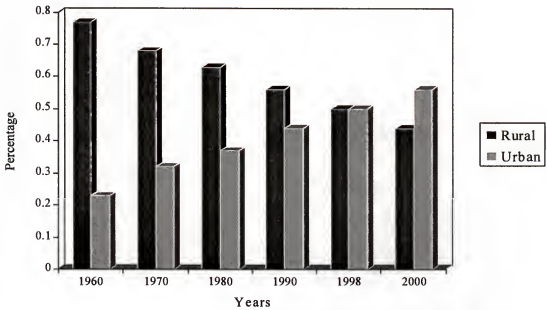

Figure 5-2 Urban and Rural Population in Veracruz, 1960-1998.
Source: INEGI (1974, 1984, 1994).

Tuxpan. The Veracruz metropolitan area accounts for aproximately 8 percent of the state's total population. This is due to the relatively high level of development that the Veracruz metropolitan area has reached during this period. Its average annual population growth rate was 2.4 percent during the decade of the 1980s, a number which far exceeds the average annual population growth rates of the state and the country in the same period: 1.46 percent and 1.55 percent respectively. In total, there are 13 cities in the state of Veracruz with a population greater than 100,000 inhabitants each.

Literacy

Among Veracruz's total population 15 years of age and older the illiteracy rate is 18.23 percent. The wide dispersion of the rural population in small communities is a primary factor contributing to this problem, which is also common at the national level. The literacy rate is much higher in the urban areas of Veracruz, given the reduced dispersion of the population and a better educational infrastructure. Of the total state population between 6 and 14 years old, approximately 90 percent attends school, while the remaining 10 percent does not attend school. On the other hand, of the total state population of 15 years old and over, 25.4 percent has incomplete elementary instruction; 18.3 percent has complete elementary instruction; 18.4 percent has complete secondary education; 0.9 percent has postsecondary education; and 13.2 percent has no education (INEGI, 1997). Currently, Veracruz has 17,784 public and private school facilites, most of them located in urban areas. Most of the illiterate population is located in rural areas and involves mainly indigenous communities located throughout the state.

Housing

The rapid urbanization of rural population in the state has resulted in a much greater demand for housing and municipal services such as potable water (or at least tubed water), sewage systems, access to electricity, telephone, among others. This increasing demand has surpassed, in several cases, the government's capability to satisfy this need, bringing as a consequence the appearance of other kinds of problems which complicate the situation even more. Some of these problems are:

(1) High rent. Current rental rates in some urban areas make it practically impossible for poor families to secure adequate housing. This situation has motivated the concentration of large families into small housing facilities.

(2) High cost of urban land. Rent is high and so is the cost of a piece of land on which to build a house. To buy a piece of land for a poor family is but a dream. This situation has motivated urban settlement in areas far from the city where the provision of public services does not exist.

(3) Parachuting. This flagrant violation of property rights has been a common problem in Mexico in the last 20 years. It consists of the invasion by the low income sector of the population of undeveloped land or useless private properties within urban areas. Fortunately parachuting has almost disappeared. This practice was motivated by an increasing homeless urban population living under conditions of extreme poverty and misery, as well as the political interest of some politicians and leaders trying to take advantage of this situation. Many social conflicts have resulted from parachuting and political opportunism.

(4) Rural to urban household systems. The establishment of rural household systems in cities creates numerous problems. Next to their houses, families raise animals such as cattle, chickens, and pigs. The problem associated with this practice is that it usually takes place under difficult hygienic conditions, which later become health problems not only for the family members but also for the neighborhood. The proliferation of flies and diseases place the health of the population at risk.

(5) Out of control growth of cities. As a result of the previous problems mentioned, it is common that urban settlement occurs in areas where public services do not exist. It is the responsibility of government, however, to provide the services to those new neighborhoods. Most of the big cities have grown in this fashion. The problem is that to provide public services results in a titanic effort for the government. At this moment, the water consumed by Xalapa's population is brought from the state of Puebla because Xalapa is located in an area where groundwater does not exist. Mexico City is consuming water brought from the states of Michoacan and Guerrero because the groundwater around Mexico City is in process of total depletion.

Public Health

With respect to public health, according to INEGI (1997), there are more than 1,350 public clinic and hospital facilities, in addition to numerous private general and specialty clinics and hospitals in the state. The majority of these are located in metropolitan areas like Veracruz and Xalapa. There is a ratio of 1.21 doctors per 1,000 inhabitants in the state, somewhat below the national average of 1.67. In 1995 the number of persons in Veracruz

permanently enjoying Mexican Social Security[1] represented 28% of the state population. That is, around 72% of the state's total population did not have access to this public service.

The provision of public health services in rural areas is different. Due to its topography there are some municipalities located in the mountain range where the introduction of public clinics and medical services is very complicated. Further complicating the situation, the population living in these areas is mainly composed of poor people, many of them indigenous, who can not pay for health services. As a result, municipalities like Tehuipango and others located in the Zongolica Sierra (central Veracruz), have virtually no access to medical services.

Physical Infrastructure

Maritime Port System

Seaports along the Gulf of Mexico present ample opportunities for investment and trade between the United States and Mexico, as well as greater and more reliable access to each country's producers and consumers. Accordingly, the Mexican government is attempting to diversify export and import entry methods through the privatization and refurbishment of port and inland transportation networks. The state has 29 ports, four of

[1]Since 1944 the Mexican Institute of Social Security (IMSS) has managed, among others, old age, severance, disability and life insurance. The IMSS is the largest institution in Mexico providing social security to the population (Grandolini and Cerda, 1998).

which are classified as deep-water ports: Veracruz, Coatzacoalcos, Pajaritos and Tuxpan. Pajaritos handles exclusively petroleum and petrochemical products, while Veracruz is Mexico's largest port in terms of maritime tonnage handled yearly, and the country's most important port for containers. On an overall basis, these four ports handle more than 41 million metric tons of cargo per year (note the location of these ports in Figure 5-3) .

It is important to mention here that, despite its importance in Mexico's international trade, the port of Veracruz has been characterized as notoriously inefficient. Bureaucracy and a large number of unions became a tremendous obstacle to efficient operation and development of the port's activities. The U.S. News and World Report (July 8, 1991:40), reported that it was faster, more secure and ultimately cheaper for local coffee or citrus growers to export their crops through Houston rather than through Veracruz. Fortunately, this situation has changed. The federal government has restructured the administration of the port of Veracruz converting it to private sector management. The results of this decision have been substantial: operating efficiency has improved; demurrage costs have declined noticeably; berthing capacity has increased; warehouse space has doubled; security for merchandise being loaded/unloaded has improved; and the level of new fixed investment earmarked for improving the port's installations as well as the replacement of equipment that was physically and technologically outdated has increased significantly.

Maritime cargo movement using containers via the port of Veracruz totaled 256,055 TEUs (twenty feet equivalent units) in 1994. Imports accounted for 51.3% of this container movement, and exports accounted for 48.7%. Of all cargo movement, 81.6% was represented by specialized cargo.

In 1992, total maritime cargo in the state was 27.66 million metric tons, of which the port of Veracruz handled 4.88 million metric tons (17 percent of total), while in 1996 total state maritime cargo was 50.7 million metric tons of which the port of Veracruz handled 10.9 million metric tons (21.5 percent of total). These numbers confirm clearly the intention of the Mexican government when it decided to privatize this port.

Other measures taken to improve the efficiency of Gulf ports included publically financed infrastructure improvements, liberalized regulations and shifting jurisdiction of the companies responsible for administration of the ports.

Other ports in the state are undergoing similar economic restructuring processes. For example, the port of Tuxpan has received $90 million in investment to connect it with Mexico City via a new superhighway (Zaretske and Rosenberg, 1998). The idea is to upgrade road and rail links to Gulf ports and develop internodal ties to U.S. carriers in the Gulf (Middleton, 1994).

Railroads

The railroad network in the state totaled 1,675 kilometers (1,041 miles) in 1996. It is located principally in the Central-South region of Veracruz. Of the total, around 49% corresponds to trunk lines, 39% corresponds to branch lines, and the remining 12 % is in private lines (INEGI, 1997). Several major rail lines connect with terminals at the port of Veracruz. One main trunk line reaches Mexico City, via Xalapa, Perote and Oriental, Puebla. Another major trunk line goes via Orizaba, Cordoba, Amatlan and Tierra Blanca in route to Mexico City (Figure 5-3).

The Trans-Isthmus Railroad was built to link the ports of Coatzacoalcos on the gulf coast and Salina Cruz on the Pacific. Current plans call for converting this route into a high speed, dual-trackage rail line specializing in moving containerized cargo. At Coatzacoalcos, the Trans-Isthmus also connects with the Southeastern United Railway, which links southheastern Veracruz with the Yucatan Peninsula.

Rail lines in the state of Veracruz moved more than 5.5 million metric tons of cargo in 1992, of which the state (primarily via its ports) shiped some 3.5 million and received the remaining two million. Of the total railroad freight movement in the state approximately 29% is through the port of Veracruz.

Airports

The state of Veracruz has three commercial airports serving the cities of Veracruz, Minatitlan-Coatzacoalcos and Poza Rica (Figure 5-3). The Veracruz airport is the only one with regular scheduled international flights (to Houston and McAllen, Texas).

The principal airlines serving Veracruz are two national carriers, AeroMexico and Mexicana, which between them operate seven daily Veracruz-Mexico City flights. Continental Airlines has nonstop Veracruz-Houston flight four days a week during several months of the year. In addition, Veracruz is served by regional airlines such as Aerolitoral, Aerocaribe, and Aeromar. Aerolitoral for example, has daily service to McAllen, Texas via Tampico and Monterrey and also links Veracruz port by air with Poza Rica; Aerocaribe flies from Veracruz to the major cities of southeastern Mexico such as Minatitlan-Coatzacoalcos,

Figure 5-3 Ports, Airports, Roads and Railroads in the State of Veracruz, 1997.
Source: Adapted from INEGI (1997).

Veracruz; VillaHermosa, Tabasco; Merida, Yucatan; and Cancun, Quintana Roo; and Aeromar flies daily from Xalapa, Veracruz to Mexico City.

Of the total commercial air traffic in the state, approximately two thirds is via the airport at the port of Veracruz. There is daily commercial air service between Mexico City and Poza Rica and between Mexico City and Minatitlan.

Highways

The state of Veracruz has an acceptable highway and road network, totaling 5,242 kilometers (3,257 miles) of paved roads. Currently, the state has more mileage in four-lane highways than any other state in the country, including the Veracruz-Cordoba-Puebla-Mexico City turnpike, the Veracruz-Xalapa-Mexico City highway, and the Orizaba-Cordoba-Acayucan-Minatitlan-Coatzacoalcos turnpike. Another important highway runs the entire length of state along the Gulf of Mexico (INEGI, 1997).

As Mexico's most important export-oriented maritime port, Veracruz has become a critical point of highway infrastructure. This is why it is the terminal point of major four-lane highways from Mexico City as well as from important intermediate manufacturing centers like Orizaba and Cordoba. Mexican government policy has as a priority objective to continue with the construction of other highways linking the northern and southern ports of the state in order to guarantee the prompt, agile movement of merchandise. It is important to mention here that the increasing level experienced in road construction has been a result of the concession that Mexican government has given to private companies. This concession is good because the privatization of these services has guaranteed more efficient realization

of objectives. One of the problems observed in recent years; however, is related to high toll fees that private companies have imposed on road users. The result is that people prefer to use federal highways (which are free) rather than the turnpikes. As a consequence of that, turnpikes have become unsafe places for driving, due to the proliferation of assaults and robberies committed on these roads. The idea of privatizing highways is not bad, but the price policy needs to be reviewed carefully as Mexico takes the risk of constructing unused "white elephants."

Labor Indicators

Based on the most recent Yearbook of the State (INEGI, 1997), Veracruz has an economically active population (EAP[2]) of 2,989,853 persons, which is 42.8 percent of the state's entire population of persons 12 years of age or older in working age, while 4,081,702 persons (58 percent) represents the economically inactive population (EIP). Of the total EAP, approximately 68 percent were men and 32 percent, women. Of the total male population over 12 years old, about 75 percent were EAP and 25 percent were EIP. In the case of female population, 44 percent were EAP and 56 percent were EIP (INEGI, 1998).

The employed EAP is occupied in the economic sectors as follows. The agricultural and livestock sector continues to be important as a job generator in the state, accounting for

[2]EAP is the number of persons 12 years of age and older who are actually working, or if not currently employed are looking for a job. EIP is the number of persons 12 years of age and older who are not currently working and also are not looking for a job.

37% of employed population. The rapid growth of the services sector, however, has promoted a greater participation in employment accounting for 47%. The industrial sector accounted for 15% (INEGI, 1997).

The open unemployment rate (OUR[3]) has been decreasing in recent years, in 1995 it was estimated at about 5.3 percent, while in 1997 it was estimated at 4.2 percent. The sectoral distribution of the total employed population receiving a salary in 1997 was as follow: The agricultural, livestock, fishing and forestry sector employed 0.9 percent; extraction and electricity employed 2.5 percent; manufacturing 11.3 percent; construction 3.4 percent; trade 22.4 percent; services 45.1 percent; communications and transport 9.5 percent; public administration 4.8 percent; and working in the USA, 0.1 percent (INEGI, 1998).

Summary

The political economy followed by Mexico the last 15 years has required enormous infrastructural, administrative, and logistic reorganization processes. The state of Veracruz, aware of that, has decidedly initiated this process. In this chapter, some of the most important geographic and socioeconomic features prevalent in Veracruz were introduced. Infrastructural facilities such as ports, airports, and other communication means were

[3]OUR is the percentage resulting from dividing the open unemployed population (OUP)by the economic active population: OUR = OUP/EAP * 100. The open unemployed population is the persons 12 years of age and older who are available to work but did not work because they did not find a job.

presented; some labor indicators are discussed, and some of the most important governmental actions set to encourage this structural transformation are also presented and discussed.

The strategic location of the state of Veracruz and the infrastructural modernization program described in this chapter are elements expected to play a crucial role in the definition of the new comparative advantage for investment in the state. The ports are all on the routes of the world's leading shipping lines. They provide access to European markets and the gulf and eastern seaboards of the United States and northeastern Canada. On the other hand, the existing internal transportation network allows transport of industrial inputs and finished products by highway from Veracruz to the leading markets of southern, southeastern, central and northeastern Mexico.

CHAPTER 6
ECONOMIC DELINEATION OF VERACRUZ

Background

One cannot understand the changes occurring in the Mexican economy in general, and in the Veracruz economy in particular, without understanding (1) the existing relationships among the different sectors of the economy, (2) the dynamics of the economy along the economic development path, and (3) the changes, mostly global, occurring in the world economy and their impact on domestic economies. Several forces including technological change, globalization, and the new dynamics of industrial location, have combined and are leading to significant changes in rural life throughout the world.

Traditionally, the role of agriculture in economic development has been viewed as passive to supportive. Indeed, economic development was seen as requiring a rapid structural transformation of the economy from one predominantly focused on agricultural activities to a more complex modern industrial and services society. As a result, agriculture's primary role was to provide sufficient low-priced food, manpower and capital to the expanding industrial economy; to contribute to the earning of foreign exchange and to a stable balance of payments; and to contribute to industrialization. The industrial sector was thought to be the dynamic leading-sector in any overall strategy of economic development

(Mellor, 1976); Mallassis, 1975). During early stages of economic development, agriculture is the dominant sector in the employment of resources and generation of income. Once economic development has reached higher levels, however, industrial and service sectors appear as the leading sectors of the economy while agriculture starts experiencing a relative decline in terms of its contribution to economic development. The inevitable relative decline in agriculture arises from (1) increased specialization in production which transfers many nonagricultural production jobs from the farm household to urban centers; (2) relatively low income elasticities of demand for agricultural products compared to nonagricultural commodities in an environment of rising incomes; and (3) high transport costs of particular agricultural and nonagricultural commodities which militate against extreme specialization in agricultural production (Mellor, 1976). The economic transformation of the agricultural sector appears as generally necessary for overall economic development.

Several points of interaction between the agricultural sector and the nonagricultural sectors are identified during the economic transformation. First, there is a major relative shift of labor from the agricultural to the nonagricultural sector. Second, creation of nonfarm jobs requires a large increase in capital in the urban sector. Third, the populous agricultural sector may provide needed markets for industrial output of consumer goods. Fourth, highly productive agriculture depends on inputs originating outside the agricultural sector (Mellor, 1976).

It is under this background that the analysis of the Veracruz economy will be done. A brief description of the national GDP trend is introduced in order to focus the dynamics of the Veracruz economic sectors within the national context.

The Economy of Veracruz

Gross Domestic Product (GDP)

Veracruz is Mexico's fifth most important state in terms of its contribution to the country's gross domestic product with approximately 6% of total GDP in the period 1970-1993, but with a significant decline in 1993 to 5 percent (Table 6-1). The annual average growth rate of Veracruz GDP during the 1970-1993 period was estimated at 1 percent, a number significantly smaller than that for the nation which was estimated at 2.15 percent.

Table 6-1 GDP in Mexico and Veracruz, 1970-1993 (million of constant N$, 1990=100).

	1970	1975	1980	1985	1988	1993
National GDP	4,442.7	3,666.8	6,109.2	6,674.9	5,933.9	7,251.3
Veracruz GDP	286.9	219.8	355.2	379.9	337.1	357.9
Ratio (%)	6.46	6.00	5.81	5.69	5.68	4.94

Source: Computed from INEGI (1996).

As shown in Table 6-2, during the first half of the 1970s, the performance of the Mexican economy in terms of overall economic growth was negative. Indeed, between 1970 and 1975, the real rate of growth of GDP was estimated to be -3.77 percent a year. However, this decline in the growth rate had the largest impact in the state of Veracruz; it registered an annual growth rate of -5.19 percent a year. The second half of the 1970s showed a different story. The average annual growth rate was approximately 10 percent in both the

nation and Veracruz. It is in this period when Mexico discovered important oil fields in the states of Tabasco, Chiapas and Campeche in Southern Mexico.

Table 6-2 Real GDP Growth Rates in Veracruz, 1970-1993 (1990=100).

ECONOMIC SECTORS	1970-75	1975-80	1980-85	1985-88	1988-93
	percentage				
PRIMARY SECTOR	-8.38	9.01	0.73	-10.59	-6.05
1. Agriculture	-10.99	8.23	3.60	-8.37	-0.17
2. Livestock	-7.42	2.90	5.09	-14.46	-2.45
3. Forestry	0.65	2.35	-11.56	11.99	7.16
4. Fishing and Hunting	-9.00	19.83	5.79	-4.65	-3.10
5. Oil, Gas Extraction	-7.94	17.58	-9.71	-18.36	-30.10
6. Mining	-2.48	-1.95	14.40	-3.67	-17.69
SECONDARY SECTOR	-3.06	10.69	-1.85	3.79	-0.73
1. Manufacturing	-2.88	9.97	-1.00	6.24	-3.87
Foodstuffs, Beverages and Tobacco	-1.18	7.21	-0.02	-1.04	1.66
Textiles, Apparel, leather goods	-5.37	8.43	-9.02	6.37	12.09
Wood, and Wood products	8.51	12.43	-18.20	-0.21	-7.57
Paper, Printing, Editorial	5.35	8.83	3.78	18.25	-9.72
Chem., Petroch., Rubber and Plastic Prods.	-2.84	12.24	-4.79	13.93	-6.89
Non-metallic Minerals	-12.09	24.94	-7.81	28.29	3.68
Basic Metal Industries	-10.11	14.26	8.68	6.55	-10.47
Metallic Products, Machinery and Equipment	-7.80	10.99	8.27	-4.13	-6.83
Other Manufacturing Industries	-14.59	15.20	-9.59	27.85	-0.17
2. Construction	-3.59	12.87	-5.00	-8.11	9.43
3. Electricity	-3.91	13.48	-1.91	4.82	15.83
TERTIARY SECTOR	-4.60	10.21	3.26	-5.03	4.16
1. Trade	-4.86	9.37	10.45	-7.67	-3.86
2. Hotel and Restaurant Services	0.12	7.47	1.09	4.91	-1.54
3. Transport and Communication	-2.24	12.71	-1.23	-1.14	11.18
4. Financial, Insurance and Real State Services	-8.62	5.74	-3.05	-1.05	15.63
5. Communal, Social and Personal Services	-0.86	13.02	-1.09	-5.64	7.20
6. Imputed Banking Services	-2.25	11.72	4.58	-0.01	10.79
7. Not Specified				-61.84	65.11
TOTAL VERACRUZ GDP.	-5.19	10.07	1.36	-3.87	1.20
TOTAL NATIONAL GDP	-3.77	10.75	1.79	-3.81	4.09

Source: Computed from INEGI (1996).

During the period 1980-85, the import-substitution model was in its final years. The economic growth rate was still positive (1.36 percent for the state of Veracruz, and 1.79

percent for the nation), however, the Mexican economy was showing some signs of economic crisis. It was in this period when Mexico changed its economic strategy from an import-substitution strategy toward an export-oriented strategy. During the period 1985-88, the economy was in recession. The GDP growth rate was negative, -3.87 percent and -3.81 percent a year for Veracruz and the country, respectively. Finally, during the 1988-93 period, the economy started showing some signs of recovery. The national growth rate was 4 percent, while the Veracruz growth rate was 1.2 percent. This gap between the state growth rate and the national growth rate occurred because of the severe recession affecting the primary sector of the Veracruz economy, which experienced for the periods 1985-88 and 1988-93 growth rates of -10.59 percent and -6.05 percent, respectively (Table 6-2). The turnaround in the average annual rate of growth of the tertiary sector, from -5.03 percent in the late 1980s to 4.16 percent in the early 1990s, was particularly noteworthy to compensate the decline in the primary sector during this period.

The rapid development of the tertiary sector has brought a major change in the structure of the Veracruz economy (Table 6-3 and Figure 6-1). The contribution of the tertiary sector to the state GDP has increased from around 48 percent (1970) to 61 percent (1993). The most dynamic activity in this tertiary sector has been "trade" with an average participation of 21 percent a year for the period 1970-1993. The contribution of the primary sector has become smaller over time. In 1970, it contributed with around 28 percent, while in 1993 its contribution declined to about 12 percent. The decline of two prominent subsectors in the past is the important cause of the overall drop in share of GDP by the

primary sector. Agriculture's contribution declined from 12 percent (1970) to 7 percent (1993), while oil and gas extraction diminished from 7 percent (1970) to 0.4 percent (1993).

Table 6-3 Veracruz: Real GDP Shares by Sector of Origin, 1970-1993.

ECONOMIC SECTOR	1970	1975	1980	1985	1988	1993
	.....	.....	percentage	.....	.....	.....
PRIMARY SECTOR	27.74	23.38	22.28	21.59	17.33	11.95
1. Agriculture	11.71	8.54	7.85	8.76	7.58	7.08
2. Livestock	5.94	5.27	3.76	4.51	3.17	2.63
3. Forestry	0.30	0.41	0.28	0.14	0.23	0.30
4. Fishing and Hunting	0.35	0.29	0.44	0.54	0.53	0.43
5. Oil, Gas Extraction	6.92	5.98	8.31	4.66	2.84	0.45
6. Mining	2.51	2.89	1.62	2.97	2.99	1.06
SECONDARY SECTOR	24.33	27.19	27.96	23.81	30.03	27.27
1. Foodstuffs, Beverages and Tobacco	7.96	9.79	8.58	8.01	8.75	8.95
2. Textiles, Apparel, leather goods	1.40	1.39	1.29	0.75	1.02	0.51
3. Wood, and Wood products	0.20	0.39	0.43	0.15	0.16	0.10
4. Paper, Printing, Editorial	0.50	0.84	0.79	0.89	1.67	0.95
5. Chem., Petroch., Rubber and Plastic Prods.	5.42	6.13	6.76	4.94	8.27	5.45
6. Non-metallic Minerals	0.44	0.30	0.56	0.35	0.84	0.95
7. Basic Metal Industries	1.88	1.44	1.73	2.46	3.36	1.82
8. Metallic Products, Machinery and Equipment	0.78	0.68	0.71	0.99	0.98	0.65
9. Other Manufacturing Industries	0.02	0.01	0.01	0.01	0.02	0.01
10. Construction	4.91	5.34	6.06	4.38	3.82	5.65
11. Electricity	0.83	0.89	1.03	0.88	1.14	2.24
TERTIARY SECTOR	47.93	49.44	49.76	54.60	52.64	60.78
3. Trade	17.93	18.25	17.68	27.16	24.04	18.59
4. Hotel and Restaurant Services	2.43	3.19	2.83	2.79	3.64	3.17
5. Transport and Communication	5.27	6.14	6.91	6.07	6.61	10.58
6. Financial, Insurance and Real State Services	11.38	9.47	7.75	6.20	6.77	13.18
7. Communal, Social and Personal Services	10.35	12.94	14.78	13.07	12.36	16.48
8. Imputed Banking Services	-0.47	-0.55	-0.59	-0.69	-0.78	-1.23
9. Not Specified	1.05	0.00	0.41	0.00	0.00	0.00

Source: Computed from INEGI (1996).

The secondary sector maintained nearly constant participation in the GDP of the state of Veracruz during this period. Its contribution increased from 24 percent in 1970 to 27 percent in 1993. That is, it increased about 3 percentage points over 23 years. Thus, the growth rate showed by the secondary sector is far from the trend expected by the Mexican

government when it decided to open the economy to foreign competition as a way to transform the country into a modern industrial nation.

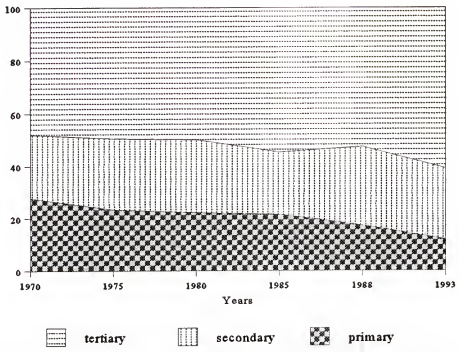

Figure 6-1 Veracruz: Real GDP Share by Economic Sector, 1970-1993.
Source: computed from INEGI (1996).

Comparison of Figure 4-1 and Figure 6-1 reveals that the trend followed by the different sectors conforming the GDP at the state of Veracruz level replicate those observed nationally, except that the decline observed by the primary sector is much greater at the state level than that at the national level. A deeper analysis of these economic sectors will be done next in order to clarify which subsectors are, in some sense, responsible for the trend followed by the sectors.

The Primary Sector

Veracruz had, before the implementation of the new Agrarian Law, a total of 3,603 ejidos and agrarian communities (INEGI, 1994). They held a total of 1,723,207 ha, an amount that represented about 24 percent of the total land area in the state. Of this total, 17,897 ha were irrigated lands (1 percent); 1,543,378 ha were rainfed lands (89 percent) ; and the remaining 161,931 ha were both irrigated and rainfed lands (10 percent). The total number of ejidatarios was 234,813, a number that represented approximately 15 percent of the total ejidatarios in Mexico (INEGI, 1994).

The contribution of agriculture to the state's GDP has been declining through time (Table 6-3). The economic restructuring process has affected the production of some crops and stimulated the production of other. Nevertheless, the economy of Veracruz remains strongly linked to agriculture. In this section recent trends of some of the most important crops produced in the state of Veracruz are described.

Agricultural production

A dynamic agricultural sector in the state of Veracruz is revealed by statistics for the production of the main crops grown in the state (Table 6-4); by area planted with these crops (Table 6-5), and by the yields of these crops (Table 6-6). While production and productivity increases are generally indicated, the overall importance of the sector to the state's economy declined consistently from 1970 to 1993. Even so, in general, Veracruz agriculture assumed more relative importance within Mexican agriculture.

Maize. Maize is the staple food of most Mexicans and is grown on about one-third of the country's cultivated land. Central Mexico is the main area of maize cultivation. About 95 percent of domestic maize production is white maize which is mainly used for human consumption.

Until the late 1980s, Mexico enjoyed maize self-sufficiency. However, in the 1990s, Mexico became a net importer of maize due to the increasing food demand and the decline of maize production in the nation. Most of the imports have come from the United States. Yellow maize is the variety imported. It is mainly used for starch production and animal feed, although it has also been used for human consumption.

Table 6-4 Production of Main Crops in the State of Veracruz, 1990-1996 (MT).

Crops	1990	1991	1992	1993	1994	1995	1996
Maize	776884	793842	864309	754057	1174566	1072294	1228964
Rice	83683	107148	103303	134486	111354	122093	156260
Black Bean	14605	53252	23123	25209	17717	17410	22213
Sorghum	11351	6963	9808	10594	23839	53445	94802
Jalapeno Pepper	26304	29317	34048	35184	26511	28867	23992
Soybean	959	1847	3149	2736	4452	9206	
5356							
Potato	62885	52478	50254	38345	57505	56694	49817
Watermelon	32996	37143	48295	30104	48142	33968	31774
Sugar Cane	8946452	12472402	13486552	15041707	10618838	15509547	16389148
Orange	1409223	1584905	1435220	1430099	1486225	1879197	2096536
Coffee	465217	568372	57425	463931	562032	522007	
Mango	145858	263148	261154	240215	177592	267479	
Banana	418031	349276	329502	308631	351601	349813	

Source: computed from INEGI (1990-1997).

Veracruz was not considered an important maize producer in the past. For example, in 1993 the state was ranked 11th in the country as a maize producer. However, in recent years its production status has changed significantly. According to the 5th Governor's

Report (1997), the state of Veracruz is currently ranked third nationally as a maize producer. The quantity of maize produced in the state for the period 1990-1996 shows an increasing trend (Table 6-4). In the 1989-90 growing season, about 522,000 ha were planted in maize (i.e. 6.6 percent of the national total), and 777,000 MT were harvested (i.e. 5.3 percent of total national production). However, in the 1995-96 growing season, about 646,000 ha were planted in maize in Veracruz (i.e 7.5 percent of the total national), and about 1.2 million MT of maize were harvested (i.e. 6.8 percent of the total national production). Around 99 percent of the maize production is cultivated in rainfed lands, and the remaining 1 percent is cultivated in irrigated lands. Maize yield has increased from 1.43 ton/ha in 1987-88 season to 2.03 ton/ha in 1995-96 season.

Table 6-5 Area cultivated in Veracruz, 1990-1996, (ha).

Crops	1990	1991	1992	1993	1994	1995	1996
Maize	522151	501764	472202	479736	657368	642310	646446
Rice	23372	27747	23424	25946	27416	24233	30306
Black Bean	40058	43005	36145	38848	36138	40924	37944
Sorghum	7799	3783	4078	3387	7491	20670	39927
Jalapeno Pepper	5814	6710	8276	8596	7324	5118	4506
Soybean	999	1411	1954	1823	2497	4654	4526
Potato	6853	5535	5744	4539	4843	5522	4713
Watermelon	2780	5783	7525	6243	7381	4943	4596
Sugar Cane	123048	170455	206830	210004	140212	208173	219573
Orange	114549	114290	120975	123349	134141	154191	161540
Coffee	157414	159665	139798	141887	151612	147511	
Mango	25211	28319	31168	29671	32284	33629	
Banana	18365	16743	15638	14723	14436	14252	

Source: computed from INEGI (1990-1997).

Rice. Rice is a product that has become a very important food consumption item for Mexicans. The total land area sown in rice decreased from 192,000 ha in 1986 to 63,000 ha in 1993. As a result, Mexico's domestic output of milled rice fell steadily from 615,000 MT

in 1986 to 287,000 MT in 1993. In recent years, the area cultivated with rice has been increasing again. It is expected that in 1998 the area cultivated with rice will reach 115,000 ha, with an estimated output of 514,000 MT. Given the growing food demand experienced by Mexico in recent years, the quantity of rice imported has increased substantially. For example, in 1993 the country imported 350,000 MT of rice.

Veracruz has been a significant rice producer in the country in recent years. For example, in 1993, the state was ranked second as a producer state. However, in 1997 the state reached first place with 30 percent of national rice production. The quantity of rice produced in the state for the period 1990-96 displays an increasing trend (Table 6-5). During the 1989-90 growing season, about 23,000 ha were planted in rice in Veracruz (i.e. 19 percent of the national total), and about 84,000 MT of rice were harvested (i.e. 21 percent of the national total production). Around 85 percent of the rice production was cultivated on rainfed lands and the remaining 15 percent was cultivated on irrigated lands. Rice yield was 3.69 tons/ha. In the 1995-96 growing season, approximately 30,000 ha were planted in rice (i.e. 33 percent of the national total) and about 156,000 MT of rice were harvested (i.e. 39 percent of the national total). An estimated 86 percent of rice production took place on rainfed lands, and yields increased to 5.26 MT/ha. In only six years, yield increased by approximately 1.57 MT/ha.

Table 6-6 Yields in main crops in the state of Veracruz, 1990-1996, (MT/ha).

Crops	1990	1991	1992	1993	1994	1995	1996
Maize	1.64	1.75	1.87	1.89	1.84	1.81	2.03
Rice	3.69	4.18	4.68	5.62	4.29	5.12	5.26
Black Bean	0.50	0.60	0.68	0.67	0.55	0.47	0.60
Sorghum	1.85	2.16	2.67	3.29	3.20	2.82	2.83
Jalapeno Pepper	4.31	4.11	3.95	4.53	5.93	5.61	6.97
Soybean	1.52	1.65	1.74	1.70	1.78	2.06	1.48
Potato	10.01	9.36	9.71	8.45	11.87	10.27	11.28
Watermelon	12.22	12.90	6.90	12.02	8.94	7.93	8.01
Sugar Cane	76.56	73.67	71.88	75.66	77.18	77.79	78.04
Orange	14.21	13.63	13.09	12.20	12.80	15.01	12.97
Coffee	3.65	1.98	0.42	3.28	3.72	3.54	
Mango	5.98	7.48	8.70	8.57	5.58	8.03	
Banana	23.01	22.46	21.80	21.70	26.76	24.67	

Source: computed from INEGI (1990-1997).

Citrus. Oranges, limes, grapefruit, and tangerines are some citrus crops commercially produced in Mexico. Their production is primarily sent to the fresh domestic market. Oranges are the most important citrus fruit produced, with the largest acreage and production, and the highest level of consumption. According to Gomez et al. (1995), oranges share about 25 percent of the country's total fruit acreage and production. Oranges are currently a major sub-sector of Mexican and world agriculture. In 1996, Mexico ranked third in world orange production (Mondragón et al., 1998). Although oranges are produced throughout much of Mexico, the most important producer states are located in eastern Mexico: Nuevo Leon, Tamaulipas, San Luis Potosi, Veracruz, and Tabasco[1]. Veracruz is currently the most important citrus producing state in the country. According to the 5th Governor's Report (1997), the state is ranked in first place in the production of oranges, grapefruit, Persian limes and tangerines. In Table 6-4 the quantity of oranges produced in

[1]For a more comprehensive description of orange production in Eastern Mexico, see Mondragón et al. (1998).

the state for the period 1990-96 is shown. In the 1989-90 growing season, about 114,000 ha (i.e 48 percent of the national total) were planted in orange trees, and 1.4 million MT (i.e. 63 percent of the national total) were harvested. For the 1995-96 growing season, it was estimated that about 161,000 ha were planted in oranges (47 percent of the national total) , and 2 million MT were harvested (53 percent of the national total). Orange production yields have oscillated between 12.2 MT/ha and 15 MT/ha during the period 1990-1996. This variation is due to fluctuations in rainfall.

Orange production is an activity with the most diverse grove care practices in Mexico. It is common to find traditional growers who employ very low levels of technology and own small land holdings, where citrus is intercropped with other crops, as well as growers who employ medium and high levels of technology and have larger land holdings.

Frozen concentrated orange juice (FCOJ) and single-strength orange juice (SSOJ) are products derived from orange production which are sent to the international market. The most important consumer areas for processed citrus juices are the United States, Europe, Asia, and some countries in Latin America.

Limes are another citrus crop which has become important for Mexico in recent years. According to the "Citrus Fruit Fresh and Processed, Annual Statistics"(FAO) (cited by Roy et al., 1997), Mexico has become the largest producer of limes in the world[2]. In 1991, Mexico produced about 11 percent of the world's total output, followed by the United States and Brazil. Among limes, Persian lime production has had an impressive

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[2] For a more comprehensive description of Persian limes production in Mexico, see Roy et al. (1996).

development in the last 10 years. After the 1977 freeze and the 1992 Hurricane Andrew in South Florida, Persian limes imports from Mexico began to flourish in the United States. The region of Martinez de la Torre, located in Central Veracruz, is the major Persian lime producing region in Mexico.

Despite the fact that the Persian lime industry is export-oriented, until now there is no official data that describe the Persian lime economic trends in an adequate fashion. In the best cases, there are some estimates of total production for the major producing regions.

Sugar Cane. Mexico has been a traditional sugar cane producer. For example, during the 1995/96 harvest season, Mexico was the seventh largest sugar-producing nation in the world (USDA, 1996). Sugar production has been increasing steadily and has reached record levels in the past three agricultural years (1994/95, 1995/96, 1996/97) (Greene, 1998). The largest sugar producing state in Mexico is Veracruz, producing 35 to 40 percent of total Mexican production of sugar during the past ten years. The quantity produced in the state for the period 1990-96 is shown in Table 6-4. In the 1989-90 growing season, about 123,000 ha were planted with sugar cane (about 18 percent of the national total), and 8.9 million MT were harvested (about 22 percent of the national total). However, in the 1995-96 growing season, approximately 220,000 ha were planted with sugar cane in Veracruz (about 33 percent of the national total), and some 16.4 million MT tons were harvested (37 percent of the national total). Approximately 78 percent of the sugar cane is cultivated on rainfed lands and the remaining 22 percent on irrigated lands. Sugar cane yields have increased from 76 MT/ha in 1989-90 season to 78 MT/ha in 1995-96 season. Sugar mill recovery rate was estimated to be 11 percent in the 1995-96 season in the state of Veracruz.

Other Crops. There are other crops which are very important for the economy of Veracruz. In terms of volume, the state produces more than 50 percent of the country's papaya, about 87 percent of its pineapple, and around one third of Mexico's banana production. It is also the leading national producer of coffee, mango and vanilla.

Livestock

In the early 1990s, about one third of Mexican territory was officially designated as grazing land. These lands were located throughout the country. During the 1980s, higher domestic food demand encouraged more intensive production of cattle near urban areas to produce both dairy products and beef, as well as the adoption of new measures to assist the meat industry. Given the sustained increase in food demand, in 1992 new trade policies such as the deregulation of cattle growers and tighter controls on imported meat were announced. The needs of the livestock industry also encouraged more extensive cultivation of fodder crops on irrigated lands. This phenomenon was known in Mexico as the livestock invasion of agricultural lands.

However, despite this significant increase shown by the livestock industry, animal husbandry contributed less than 1 percent to total GDP during the early 1990s . Among the factors limiting the performance of this economic activity were inadequate investment, high feed costs, low prices fixed by the government, poor weather conditions, epidemics and diseases (Goodman, 1997). As a result, weak productivity forced Mexico to become a net importer of beef.

Veracruz has been an important livestock producer for the country. According to the 5th Governor's Report (1997), the state is currently ranked in first place with respect to cattle

numbers, second in milk production, and second in poultry breeding. Due to the diversity of climates, annual rainfall levels and vegetation, Veracruz has been able to develop different types of livestock. The trend of livestock production in the state for the period 1990-98 is generally upward (Table 6-7). Cattle represents by far the most important element in the state's livestock production. In 1990, beef production was 121,704 MT, while in 1998, estimated production is 375,450 MT, which means an average production growth rate of about 15 percent a year. With respect to milk production the story has been different. In 1990, production was around 550 million liters, while the production expected in 1998 is estimated at 587 million liters, an average growth rate of about .8 percent per year.

Table 6-7 Livestock Production in the State of Veracruz, 1990-1998.

Product/Specie	1990	1991	1992	1993	1994	1995	1996	1997	1998*
Meat (MT)	121704	221252	316247	306634	436806	465444	355488	392620	375450
beef	43738	130518	217299	178396	222844	209284	168894	186899	184012
pork	23847	28062	32278	36369	29030	45616	38091	45923	44415
mutton	44	948	1853	1719	1577	1557	1718	2079	1049
goat	44	229	41	384	441	429	277	363	274
chicken	54031	61495	64402	89766	182914	208558	146508	157350	145700
Milk (thousand of lt.)	549952	641827	733703	665591	511913	699598	551868	596372	587578
cattle	549468	641366	733265	665290	511693	699258	551519	596024	587197
goat	484	461	438	301	220	340	349	348	381
Eggs (MT)	10641	12683	14726	15340	14044	16334	15531	15896	15902
Honey (MT)	6000	4850	3701	4970	5273	4746	4454	4592	3526
Wax (MT)	200	222	244	304	208	154	464		
Wool (MT)	101	146	192	194	227	141	113		

* forecasted by Secretaria de Agricultura, Ganaderia y Desarrollo Rural (1998).
Source: computed from INEGI (1990-1997).

The chicken production has shown an impresive increase in recent years. In 1990 the total production was estimated in 54,031 MT, while in 1997 it was calculated in 157,350

MT. This increase in chicken production is result of a significant increase in the demand of this product. The reason is that, among meats, chicken is still a cheap product for the population. The chicken flock of Veracruz produced 10,641 MT of eggs in 1990, and the expected production in 1998 is 15,902 MT, an average growth rate of about 5 percent a year.

Veracruz's apiculture produced 6,000 metric tons of honey in 1990. However, a significant decline in production is expected in 1998 to 3,526 metric tons. In this case, the average growth rate is estimated in -6 percent a year.

Despite the strong growth shown by the Veracruz' livestock sub-sector, its contribution to the total state's GDP has been less significant through time. For example, in 1970, its contribution to the state's GDP was about 12 percent, while in 1993, this contribution declined to 7 percent (Table 6-3).

Forestry

About 141 million ha of Mexico's territory consists of forests and wildlands (about 72 percent of the national territory). These forests include a wide range of forest types that can be summarized in four major categories: temperate (coniferous, broadleafed, and cloud forest), which cover around 16.1 percent of the total land; tropical (evergreen, semi-evergreen, and deciduous), which cover around 12 percent of the total land; arid and semiarid (scrublands, desserts and grasslands), which cover 29.7 percent of the total land; and wetlands (aquatic and subaquatic vegetation and mangroves), covering 2.5 percent of the total land (Segura, 1997). Coniferous pine forests of the temperate and cool regions are commercially the most important species. They provide pulpwood for processing in the

paper industry, sawwood, and related products. More than 65 percent of Mexico's forests consist of hardwoods, and the rest are softwoods (Goodman, 1997). The National Periodic Forest Inventory of 1994 reported a total standing volume of 2,800 million cubic meters; of which 1,800 million is from temperate forests, and 1,000 million is from tropical forests. In the tropics the major timber stands are mahogany, cedar, primavera (white mahogany), oyamel, oak, holm oak, and pine. In addition to timber products, Mexican forests are also a source of a large number of important non-timber products. There are more than 250 of these products that have an important local or regional economic value (CONAF, 1996).

Table 6-8 Timber Production in the State of Veracruz. 1988-96, (cubic meters in roll).

Product/Specie	1988	1989	1990	1991	1992	1993	1994	1995	1996
CONIFEROUS	37943	48889	58867	53700	80103	66392	55761	68716	104063
pine	37862	48703	58719	53374	79334	65623	55548	68262	103567
true fir	69	68	55	258	246	369	111	269	128
cypress and others	12	118	93	68	523	400	102	185	368
HARDWOODS	8087	11659	16198	19657	12552	15740	7809	7982	10606
oak	7221	10567	13914	18874	11371	14200	6522	6586	9271
others	866	1092	2284	783	1181	1540	1287	1396	1335
FINE WOODS	6685	6021	4183	5095	3392	5520	2675	6976	5598
TROPICAL WOODS	8604	5521	6847	8006	5795	2505	1196	6132	5449
TOTAL	61319	72090	86095	86458	101842	90157	67441	89806	127716

Source: computed from INEGI (1990-1997).

Veracruz is not considered an important forest producer in the country. The contribution of the forestry sub-sector to total state GDP has been some 0.3 percent for the period 1970-93, with significant declines in 1985 and 1988 (see Table 6-3). Forestry production in Veracruz over the 1988-1996 period shows some variability (Table 6-8). The exploitation of coniferous pine represents some 81 percent of the total volume of forestry

production in the state. The rate of growth in the exploitation of this specie is estimated at about 13 percent for the period 1988-96 given a major harvest in 1996.

It is important to mention here that the forestry sector in Veracruz, as well as in the nation, has suffered from over exploitation and insufficient investment, planning, and management. All of these aspects have accelerated the deforestation process throughout the country. Nationwide deforestation has resulted in the loss of some 370,000 hectares annually as land has been cleared for cultivation (SARH, 1994). Livestock grazing, fires, as well as the irrational exploitation of other forest products have also contributed to forest degradation. In order to attack this growing problem, the Mexican government has put in operation important reforestation programs in recent years. These programs have been gaining more and more importance every year.

Fishing

Mexico has some 11,500 kilometers of coastline along the Pacific Ocean, Gulf of Mexico, and Caribbean Sea. Its inland waters cover an area of around 2.9 million hectares. These natural resources provide a rich variety of fish and other seafood for the country. The Pacific coast produces nearly three quarters of Mexico's total catch. The most important varieties caught in this region are lobster, shrimp, croaker, albacore, shipjack, and anchovies. The Gulf of Mexico and Caribbean waters produce shrimp, jewfish, croaker, snapper, sawfish, mackerel, snook, and mullet. The Gulf of Mexico is an especially important source of shrimp. Certain species such as shrimp, lobster, abalone, clam, croaker, grouper, and sea turtle, are reserved for the country's more than 284 fishing cooperatives.

Table 6-9 Fisheries: Landings in Dockside Weight, 1989-96, (MT).

Destination and Species	1988	1989	1990	1991	1992	1993	1994	1995	1996
DIRECT HUMAN CONSUMPTION	113900	104449		70091			132715	134616	140316
Carp		345	234	1118			1147	1716	1698
Shark	837	603	661	1606			839	781	944
White Mullet	1929	1762	1137	1168			5329	5568	4674
Tilapia	9541	10478	11963	18303	18039	16840	16505	16498	16186
Crab	1968	870	1523	2993	2928	4339	4380	4395	4809
Tuna	10	11	156	231	562	448	884	990	699
Shrimp	1687	1793	1728	1599	1354	1088	896	1323	2038
Snapper	483	473	411	1315	538	637	536	470	440
Drum			54	350	591	654	481	705	606
Mullet	643	510	86	192	940	831	626	853	689
King Mackerel	940	1171	813	2300	2530	1837	1520	1566	2065
Snook	718	634	360	688	556	867	863	1101	1195
Spanish Mackerel	1569		2681	4280	2580	1512	1780	1889	2684
Shark	1095	930	718	1796	2043	1133	1063	709	1187
Oysters	39418	31992	19919	9732	7005	10387	17614	12962	17996
Other			5842	16370	26898	38368	33370	37362	37962
Unregistered Landings*			27637	6050	38962	40352	44882	45728	44514
INDIRECT HUMAN CONSUMPTION		159		209	714	519	507	1057	1170
TOTAL	113900	104608		70300		119812	132222	135673	141486

*Refers to landings which for various reasons escape the formal register of the Secretary of Fisheries. This amount is determined through indirect estimation

Source: computed from INEGI (1990-1997).

Veracruz has around 600 kilometers of coastline on the Gulf of Mexico and several lakes, lagoons and rivers. Fishing is an important activity for the state's economy in terms of employment, income and food supply. For example, in 1996 the fishing sub-sector in Veracruz employed some 45,687 people of which 12,429 were fishermen organized in fishing cooperatives; 20,410 were private fishermen; 12,748 were individual fishermen, and the remaining 40 were public fishermen coming from fishing schools and technical institutes (INEGI, 1997). The most important fish species caught in Veracruz coastlines, as well as

the volume of fish caught for the period 1988-96 are shown on Table 6-9. The table is incomplete due to the lack of information for some species. Nevertheless, the available data allow determination of the most important species for the state. According to the 5th Governor's Report (1997), Veracruz is ranked first in Mexico in the production of tilapia, oysters and sawfish, which is consistent with the information contained in Table 6-9. The report also says that the state's fishing sub-sector is ranked first among other fish producing states as an employment generator. Most of the species caught in the Gulf of Mexico are sent to the domestic market, a few of them like shrimp and lobster are sent to the export market. Nevertheless, the contribution of the fishing subsector to the state's GDP remains marginal. In 1970 it contributed some 0.35 percent to GDP and in 1993 its contribution was 0.43 percent.

Oil and gas extraction

Commercial production of crude oil began in 1901 in Mexico. By 1910, the Panuco-Ebano and Faja de Oro fields located in the north of Veracruz, were the most important oil production centers in the country. Mexico began to export oil in 1911. During the 1920s, despite disruption caused by the Mexican Revolution, Mexico led the world in oil exports. In 1931, the Poza Rica oil field was discovered in north-central Veracruz, which became Mexico's main source of petroleum until the late 1950s.

Extensive oil discoveries in the 1970s in the states of Chiapas, Tabasco and Campeche, as well as the accelerated depletion of Veracruz oil fields, were the main reason that Veracruz state lost supremacy in the national oil production. Oil production reached high negative growth rates such as -30 percent during the period 1988-93 (Table 6-2). As

a result, the contribution of this activity to the total state GDP has become marginal in recent years representing only 0.43 percent in 1993 (see Table 6-3).

Mining

Mexico has been an important world producer of cooper, silver, zinc and lead in the world. For example, in the early 1990s, Mexico was the world's seventh largest producer of cooper. In 1994 Mexico produced 163,700 tons of lead and 356,000 tons of zinc. Mexico's production of zinc constituted 4 percent of world output in 1992, and zinc ranked second among domestically mined minerals in terms of value, after copper but ahead of silver (Goodman, 1997).

Table 6-10 Total National and Veracruz State Mining GDP, 1988 and 1993.

Sub-sector	1988			1993		
	State GDP thousand N$	National GDP thousand N$	Ratio %	State GDP thousand N$	National GDP thousand N$	Ratio %
TOTAL	1,293,655	12,753,355	10.14	840,713	19,708,077	4.27
Coal and graphite extraction and processing	NA	710, 948	NC	NA	1,100,917	NC
Oil and natural gas extraction	630,619	6,518,849	9.67	244,679	8,816,752	2.82
Iron extraction and processing	NA	629,723	NC	NA	732,035	NC
Ferrous metallic mineral extraction and processing	NA	2,295,449	NC	NA	1,989,109	NC
Quarry extraction and processing	156,562	1,719,757	9.10	476,558	6,350,829	7.50
Non-metallic minerals extraction and processing	506,473	878,629	57.64	115,476	718,435	16.05

NA=not available, NC=not calculated.
Source: computed from INEGI (1996).

The most important mining zones are located in Mexico's west, which runs from the states of Baja California Norte, Sonora, Sinaloa, and Western Chihuahua, and north central Mexico, which includes the states of Zacatecas, Hidalgo and San Luis Potosi.

Veracruz is not an important mining producer state for the country. In 1988 the state's mining GDP, which was equal to 1.3 million pesos, represented 10 percent of the national mining GDP. In 1993 the contribution of this Veracruz sub-sector to the total national mining GDP, however, decreased to only 4 percent (Table 6-10). All the activities included in this subsector have shown a decline in their relative contribution to the national mining GDP. In some cases the decline has been drastic. For example, in oil and natural gas extraction, the Veracruz contribution decreased from 10 percent to 3 percent. In the case of non-metallic mineral extraction and processing the contribution declined from 58 percent to 16 percent.

The Secondary Sector

The state of Veracruz has five very well-defined industrial regions along its territory. These regions were promoted by the government in the past in order to stimulate regional development. The regions are:

South, which includes the Coatzacoalcos-Minatitlán belt. Petrochemical, chemicals, food/beverages, tobacco, machinery and equipment, are the most important industrial activities located here.

East, which includes the Veracruz-Boca del Rio belt. The industrial activities located here are related to basic metal industries, machinery and equipment, foundry parts for the automotive industry, and some maquiladora industry plants.

Central, which includes the Orizaba-Cordoba belt. The industries located here are food/beverages, cement, textiles, paper, coffee, tobacco, metal industry, machinery and equipment, and foundry parts for the automotive industry.

North, which includes the Poza Rica-Tuxpam belt. The industries located here are food/beverages, tobacco, machinery and equipment, and wood and wood products.

Capital, which includes Xalapa City, the capital of the state. The industries located here are related to food/beverage activities. The most important economic activities in this zone are related to services such as trade, public administration, and education.

These regions produce around 94 percent of the GDP of Veracruz, and absorb 85 percent of the total formal jobs in manufacturing.

Manufacturing

In the early 1950s, the manufacturing sector eclipsed agriculture as the largest contributor to Mexico's overall GDP. The upward trend of manufacturing growth, however, abruptly stopped with the end of the import-substitution industry policy in 1982 and then reversed itself during the mid 1980s. Sharp reductions in both exports and internal demand caused manufacturing output to fall drastically.

The state of Veracruz's manufacturing GDP growth rate has been consistent with the trend observed by this economic indicator at the national level. For example, during the early 1970s, manufacturing output grew at an annual average growth rate of -2.88 (Table 6-

2). It is during this period when the import-substitution industrialization strategy showed its first signs of economic crisis. New oil field discoveries in southeast Mexico, however, postponed the death of this strategy until the early 1980s. These oil field discoveries were an economic incentive for the manufacturing sector of Veracruz which in the late 1970s began to recover, growing by 10 percent. After that, manufacturing output slowed; it grew by -1 percent during the 1980-85 period, as a result of the imminent economic crisis of the ISI strategy. Following this contraction, manufacturing output expanded by 6 percent during the period 1985-88. However, after this expansion, manufacturing output decreased once again to -3.87 percent average per annum during the period 1988-93.

As a result of this frequent decline in the state's manufacturing output, manufacturing GDP has lost relative share with respect to national manufacturing GDP. Indeed, in 1988 the state of Veracruz's manufacturing GDP represented 5.3 percent of national manufacturing, but in 1993 this relative share was 4.7 percent (Table 6-11). The most unstable manufacturing subsectors during the 1970-93 period were non-metallic minerals; basic metal industries; and metal products, machinery and equipment. In 1993 the manufacturing sector accounted for 27 percent of the state's total GDP (Table 6-3).

Table 6-11 National and State of Veracruz's Manufacturing GDP, 1988 and 1993.

	1988			1993		
Manufacturing GDP	State GDP thousand N$	National GDP thousand N$	Ratio %	State GDP thousand N$	National GDP thousand N$	Ratio %
Total	5,561,181	105,402,781	5.28	10,788,551	226,842,924	4.76

Source: INEGI (1996).

In 1993 Veracruz had 14,740 manufacturing enterprises, which employed some 109,191 workers. The value of the gross total product generated by this sector was 33.6 billion pesos, and the value added was 11.2 billion new pesos (Table 6-12).

Table 6-12 Economic Units, Employed Personnel, Gross Total Added Value in the Manufacturing Sector, 1993.

Sub-Sectors	Economic Units	Employed Personnel	Gross Total Product (thousand N$)	Added Value (thousand N$)
TOTAL	14,740	109,191	33,623,794	11,257,262
1. Foodstuffs, Beverages and Tobacco	6,861	51,535	8,433,290	2,716,944
2. Textiles, Apparel, leather goods	1,878	7,154	252,556	127,514
3. Wood, and Wood products	2,227	4,700	77,270	33,366
4. Paper, Printing, Editorial	583	6,849	1,280,676	165,091
5. Chem., Petroch., Rubber and Plastic Products.	145	21,766	20,608,434	7,220,374
6. Non-metallic Minerals	774	4,675	648,909	253,150
7. Basic Metal Industries	11	3,422	1,736,629	508,349
8. Metallic Products, Machinery and Equipment	2,192	9,133	583,764	231,279
9. Other Manufacturing Industries	78	139	2,263	1,191

Source: INEGI (1997)

Table 6-13 Employment by Economic Units in the Manufacturing Sector of Veracruz, 1993.

Number of Workers	Total Economic Units	Ratio (%)
TOTAL	**14,749**	**100.00**
0 to 2	9,703	65.78
3 to 5	3,641	24.68
6 to 10	697	4.72
11 to 15	196	1.33
16 to 20	106	0.72
21 to 50	193	1.30
51 to 100	90	0.61
101 to 250	51	0.34
251 to 500	34	0.23
501 to 1000	24	0.16
1001 and more	14	0.09

Source: INEGI(1997).

Foodstuffs, beverages and tobacco products constituted the leading manufacturing sector in terms of employment in Veracruz in 1993, accounting for 47 percent of the total employment generated by the secondary sector. The chemical and petrochemical subsector accounted for 20 percent of the total labor force employed in this sector the same year.

From the total manufacturing enterprises identified in the state of Veracruz in 1993, around 66 percent employed 2 or less workers, 24 percent employed between 3 to 5 workers, and the remaining 9 percent employed more than 10 workers (Table 6-13). That is, 90 percent of manufacturing enterprises employed no more than 5 workers each. In other words, almost all of the manufacturing enterprises located in the state of Veracruz are small enterprises.

Construction

The construction sector accounted for more than 5 percent of the total state GDP in 1993 (Table 6-3). In 1988, the state's construction GDP was estimated at 847 million new pesos, a number that represented 5.4 percent of the total national construction GDP (Table 6-14). However, in 1993 this indicator represented 5.29 percent of the national total. In 1996 Veracruz had about 697 registered construction companies which employed around 12,600 workers, and generated a production value of 1.2 billion new pesos of all construction companies, 651 were qualified as small sized (93 percent), 24 as medium sized (4 percent), and only 22 as large sized companies (3 percent). Thus, the construction subsector, as in the manufacturing subsector, proliferates with small sized companies (Table 6-15).

Table 6-14 National and State of Veracruz's Construction GDP, 1988 and 1993.

	1988			1993		
Construction GDP	State GDP thousand N$	National GDP thousand N$	Ratio %	State GDP thousand N$	National GDP thousand N$	Ratio %
Total	847,442	15,726,170	5.39	3,142,021	59,425,904	5.29

Source: INEGI (1996).

Table 6-15 Economic Units, Employed Personnel, and Value of Total Product, in the Construction Subsector, 1996.

Size of Enterprises	Economic Units	Employed Personnel	Gross Total Product (thousand N$)
TOTAL	697	12,648	1,212,511
Small	651	7,412	545,010
Medium	24	586	61,251
Large	22	4,650	606,250

Source: INEGI (1997).

Construction is a cyclical industry. In the period 1970-75 it exhibited a -3.6 average growth rate, however, it accelerated to 12.9 percent during the period 1975-80. It slowed again for the periods 1980-85 and 1985-88 to -5 percent and -8.1 percent, respectively. It recovered again for the period 1989-93 to a 9.4 percent annual rate of growth. Higher interest rates and the economic recessions experienced by the Mexican economy during these periods were the reasons for instability in the construction sector.

Electricity

Veracruz generated a total of 21,719 Giga Watt-hours (GWh) of electricity in 1996. Of this total, thermal plants (coal, oil, or gas fired) generated 13,405 GWh (i.e. 62 percent), hydroelectric plants generated 436 GWh (2 percent), and nuclear plants generated 7,878

GWh (36 percent) (INEGI, 1997). The state's electricity GDP in 1988 was equal to 253 million pesos, an amount that represented 5 percent of the national electricity GDP (Table 6-16). In 1993, the state's electricity GDP was equal to 1.2 million new pesos, an amount that represented 7.2 percent of the national electricity GDP.

Table 6-16 National and State of Veracruz's Electricity GDP, 1988 and 1993.

	1988			1993		
Electricity GDP	State GDP thousand N$	National GDP thousand N$	Ratio %	State GDP thousand N$	National GDP thousand N$	Ratio %
Total	252,970	4,959,410	5.10	1,246,671	17,275,816	7.22

Source: INEGI (1996).

Table 6-17 Economic Units, Employed Personnel, Gross Total Product and Added Value in the Electricity Subsector, 1993.

Sub-Sectors	Economic Units	Employed Personnel	Gross Total Product (thousand N$)	Added Value (thousand N$)
Electricity	1	7,267	3,485,124	2,678,912

Source: INEGI (1997).

This increase in the relative contribution of the state's electricity GDP to the nation is a result of nuclear power generation during the late 1980s and early 1990s. There is only one company producing electricity in the state of Veracruz, the state-run Federal Electricity Commission (CFE), which employed 7,267 workers in 1993, and generated a gross value of production of 3.5 billion new pesos. The added value was estimated to be 2.6 billion pesos for the same year.

The Tertiary Sector

The tertiary sector is the sector that provides services, often intangible in forms, to other producers (producer services) and the general public (consumer services). This sector involves a wide range of functions such as wholesaling and retailing to provision of business, personal, and entertainment services. In some sense, the tertiary production consists of all other economic activities not included in the other two sectors.

Studying economic progress in relation to the economic structure of different countries, some economists have found a very firmly established set of generalizations about the tertiary sector such as: (1) a high average level of real per capita income per head is always associated with a high proportion of the working population engaged in tertiary industries; (2) low real per capita income is always associated with a low proportion of the working population engaged in tertiary production and a high percentage in primary production; (3) high average real per capita income compels a large proportion of producers to engage in tertiary production even in countries which are supposed to be predominantly agricultural (Berry et al., 1997). The reasons for growth of the relative number of tertiary producers should be sought on the demand side. Indeed, as incomes rise and more people (men and women) are incorporated in the labor market, the demand for such services increases. Many of these services are non-transportable, so they must be supplied by workers within the country concerned.

At the same time that economic development is taking places, the tertiary sector becomes more and more relevant for the economy, new services appear every day enlarging

the scope of this sector, and more people are employed in such activities. Actually, the set of tertiary activities accounts for the majority of employment and GDP in most of the countries. Measure of productivity in this sector, however, is more difficult to compute compare to primary and secondary sectors. This is due to two fundamental problems. The first one refers to the fact that, under the term "services", are aggregated together miscellaneous activities with little in common. Bauer and Yamey (1951) wrote that "the tertiary production is an aggregation of many dissimilar activities.... There is no reason why the demand for every one of these should follow a common trend. The only feature common to all tertiary production is that the output is non-material". Secondly, given the complexity of the services sector, the difficulty of measuring productivity in many service industries is substantial, particularly in those that account for the bulk of employment in services: education, health services, government. One solution to the heterogeneity of this sector was introduced by Foote and Hatt (1953) when they suggested that the tertiary sector should be broken down into three distinct sectors or categories: (1) *tertiary industries*, defined as domestic and quasi domestic services such as restaurants and hotels, laundry and dry cleaning, and repairing and maintenance. The idea of this grouping is that they all provide services directly to the consumers; (2) *quaternary industries,* including transport, commerce, communication, finance, and administration. The characteristic defining this grouping is that these industries facilitate the division of labor; and (3) *quinary industries* which comprises medical care, education, research, and recreation. The principle governing this grouping is that they all have to do with the refinement and extension of the human capacities (Berry et al., 1997).

Bell (1974) associated the quaternary and quinary sectors with what he called "the coming of postindustrial society". He forecasted the emergence of a new form of society with new leading sectors and geographies that contrasted sharply with those of preindustrial and industrial society. Indeed, Bell found that in the sectoral composition of employment in the United States between 1900 and 1990, the major shift in shares after the 1920s involved significant expansion of the quaternary sector, the sector responsible for effecting and transforming mass production, whereas the most significant changes after the 1980s have involved the rapid expansion of the quinary sector, the sector responsible for engineering new social and economic development. The tertiary sector has remained relatively constant throughout the twentieth century.

The development of the service sector in recent years has evolved such that the set of services that have been growing, are not services in the traditional sense at all, but new kinds of specialized technical and business activities, and a variety of public and not-for-profit organizations. As a main feature, these services create and use knowledge products in the same way that the manufacturing industry transforms raw materials into physical products. These knowledge products have become the driving force of the modern economic paradigm, in which the leading sectors helping to restructure the geography of the manufacturing industry, are the primary source of most of the productivity increase in manufacturing: technological innovation, better resource allocation, and better education.

Nevertheless, despite this regrouping introduced by Bell, the complexity and diversity of the services sector continues. On a comparative basis, the evolution of labor productivity in services as a whole shows wide disparity between countries. This indicates

that the evolution of productivity in services is to a large extent dependent on the actual structure of services in each country.

The tertiary sector in Veracruz

The growth rate of the Veracruz's GDP shown by the tertiary sector has followed the same cyclical trend as the primary and secondary sectors for the period 1970-1993 (Table 6-2). For example, during the period 1970-75 the growth rate was -4.6 percent, but in the next period, 1975-80, it was 10.21 percent. It decreased to 3.26 percent for the period 1980-85, and become negative, -5.03 percent, during the 1985-86 period. Finally, during the period 1988-1993 it became positive, 4.16 percent. The contribution of the tertiary sector to the state's GDP shifted from 48 percent in 1970 to 61 percent in 1993 (Table 6-3). These numbers are consistent with the phenomenon known as the "tertiarization of the economy".

In analyzing some of the subsectors within the tertiary sector provides the following observations: (1) the subsector "hotel and restaurant services", which belongs to the tertiary sector according to Bell's classification, has shown a more or less constant contribution to the state's GDP by shifting from 2.43 percent in 1970 to 3.17 percent in 1993; (2) the subsectors including "trade, transport and communication, finance, insurance and real estate services", which belong to the quaternary sector according to Bell's classification, have shown strong growth during the 1970-1993 period. In the case of "trade" a decline is observed after 1985, which in some sense is consistent with Bell's forecast, but in the other subsectors this trend is not observed. Finally, the subsectors that include "communal, social and personal services" (i.e., quinary services), such as medical care, education, recreation, and research, have shown increasing growth during this period. In 1970 they contributed to

the state's GDP by 10 percent and in 1993, its contribution was estimated at 16 percent, which is consistent with Bell's predictions.

Although the data available for this sector are not sufficient to perform a deeper economic analysis, this brief analysis of the Veracruz's tertiary sector allows the following conclusions: The services sector is claiming center stage in the economic development of the state of Veracruz. For more than two decades this sector has generated 50 percent or more of the state's GDP and employed the majority of its labor force. Even more, this sector continues to claim an increasing share of the state's GDP; the rate of growth among tertiary activities is different; some activities have shown greater growth rate than others. In this sense, the estimation of a growth rate for the whole sector doesn't make sense. Aspects such as the expansion of foreign trade, the growth of the world economy, the increasing complexity of corporations are examples of factors contributing to the growth of the services sector.

Synthesis-Summary

The abandonment of the import-substitution strategy (ISI) and the adoption of an export-oriented economic model (EOI) has resulted in a major shock to the economy of Veracruz. With respect to the primary sector the following observations are valid. In agriculture, the opening up of markets, price decontrol, and the transformation of land ownership have precipitated a renewed exodus of people from rural areas toward urban centers. In this sense, the primary sector has become an important supplier of labor to the

other sectors of the economy, but it is failing as a provider of food for an increasing urban population and as a supplier of raw materials to processing industries.

During the transition, the economic restructuring process has meant the abandonment of the production of some traditional crops and the elimination of some firms. Several crops have shown an increasing trend with respect to the amount of land planted, volume produced and yields obtained. Improvements in the performance of these crops has not been enough to compensate the decreasing relative share of the primary sector to GDP.

The other subsectors in the primary sector have shown a critical decline in their relative contribution to the economy of the state. The inadequate use and exploitation of the natural resources, combined with falling international prices for related commodities, has made these subsectors less and less relevant for the economy of Veracruz.

In the secondary sector, despite an increasing concentration of the labor force in urban areas, this sector's share of both GDP and employment in Veracruz has changed little. The lack of investment flows toward industrial activities has limited the expansion of employment possibilities for surplus labor provided from the primary sector. As a consequence, the industrial sector has failed to play the important role usually assigned to it by the theory of economic development.

The tertiary sector has been by far the most dynamic sector of the Veracruz's economy during the transition. It has become the natural recipient and last resort for much of the labor released by the primary sector. These people are found often in "penny capitalist" activities with little future other than survival. The high concentration of population in urban areas has generated many economic, social and political disturbances.

The appearance of tertiary activities, however, like those related to the informal economy, have mitigated, in some sense, the impact of these disturbances on the society. Furthermore, a range of investments in tertiary development service activities such as telecommunications, education and others that impact on the knowledge base create both important employment multipliers and enhance potential productivity of human resources.

The incorporation of Veracruz's economy into the information age and telecommunication revolution is still incipient. Nonetheless, significant advances in this subsector have been appearing in recent years. "Tertiarization" of the Veracruz economy is just around the corner.

CHAPTER 7
THE STATE IN TRANSITION

Introduction

Mexico is a nation undergoing rapid changes not only in economic terms, but also in cultural and political terms. The application of market reforms has included the reorganization of the structure of state government and economic functions. As a result, the discussion regarding the role of government in promoting economic development has become a hot topic. Many pages have been written about it and there is still no consensus about the new role of government in this more open Mexican economy. As a part of this transformation process, the idea of a new federalism has been adopted by the federal government in order to encourage even more the new economic strategy. The aim of this chapter is to set the stage for considering the rapidly emerging demand placed on local government for implementation strategies that will facilitate the transition to local, community based and participatory guidance of economic development ... a stake holder driven system.

Background

By the early 1940s, the Mexican postrevolucionary state had built its basic structures. The political processes and institutions that would broadly define Mexican politics for the next forty years were well established: a strong federal government dominated by a civilian president and his loyalists within the ruling party (Revolutionary Institutional Party, PRI), a symbiotic relationship between the state and the official party (PRI), a regular and orderly rotation of power among rival factions within a de facto single-party system, and a highly structured corporatist relationship between the state and the government-sponsored constituent groups (Brás, 1997). In this sense, the state relationship to economic development was distinguished by two outstanding features: (1) a concentration of economic decision making and power in the presidency; and (2) the adoption of social reforms in order to achieve economic growth and social justice. Economic nationalism was added to the mix to be promoted through state enterprises and encouragement of the indigenous private sector. This was the economic content of the well known "revolutionary nationalism" (Valdez-Ugalde, 1996). It represented the economic statism of the contemporary Mexican state. The leading economic institutions of society were state companies, 1,155 of them by 1982. This meant that rent-seekers and bureaucrats organized the leading sectors of the economy (Craig Roberts and LaFollete Araujo, 1997). According to Cabrero Mendoza (1996a) the result of this model was a centralized presidentialist government whose most important features were: (1) subordination of local governments to the federal government; (2) systematic blockade

of local or regional initiatives by the federal government; and (3) lack of economic resources in states and municipalities (see Appendix A for a description of the Mexican government).

This brand of populism and socialism was extended widely throughout developing countries, which under the slogan of being anti-imperialist, maintained a hostile attitude to market-oriented reforms. Nevertheless, the 1970s saw a growing consensus about the importance of market-oriented policies. In Mexico, it was not until the financial crisis of the 1980s that the political system began to disintegrate. Indeed, as public funding for a variety of programs disappeared, the state's role in the economy was scaled back and the clientelist relationship developed over four decades between government agencies and legally recognized constituent groups were weakened.

Seeking to establish a basis for the future economic growth, the coming presidents carried out a structural adjustment program that systematically dismantled the government-run economy and lay the foundations for a market oriented economy. The economic development paradigm leading this structural adjustment program is known as neoliberalism. The theoretical assumption of neoliberalism is that the free functioning of the market forces leads to a better utilization and allocation of resources, guarantees a better satisfaction of the requirements of consumption, a larger balance of foreign trade, and altogether produces higher economic growth and therefore development (Heredia and Purcell, 1995). Accordingly, the neoliberal theory recommends: a radical break with the role of the state as the engine of economic growth, reduction of controls and restrictions on foreign trade, adjustment of the exchange rates, abolition of interventions in domestic markets and liberalization of the financial markets. In this sense, neoliberalism refers not only to

economic aspects but also implies a set of political and cultural transformations in Mexico. These transformations are redefining a new political matrix and a new role for the state in the context of the Mexican economy.

Restructuring the State and Political System

Undoubtedly, the economic crisis of the 1980s and the shift in national development strategy had important political consequences for Mexico's postrevolutionary political system. On the one hand, prolonged rising inflation, faltering economic growth, and growing balance-of-payment problems eroded the regime's performance-based claims to political legitimacy. On the other hand, the Mexican government's implementation of market reforms began to erode the regime's traditional bases of mass support and created new lines of division within the political elite. Conflicts arising over the direction of economic policy aggravated tensions within the governing political elite. A clear confrontation between the old PRI's members, known as "nationalists," against the new PRI's members, known as "neoliberals," started growing (Cook et al., 1994). As a result of this struggling, some factions of the nationalist group left the PRI finding refuge in the opposition parties, strengthening the position of these parties; and other factions decided to remain in the PRI but in frank and open opposition with the neoliberal group. Moreover, public concerns regarding management of the economy, corruption in government, and electoral fraud were aspects that accelerated the restructuring of the political system.

Accumulated socioeconomic discontent and growing demands for democracy produced in 1988 an unprecedent challenge to the PRI's electoral hegemony (Cook et al., 1994).

Under these conditions, the presidentialist political system emanating from the Mexican revolution has been challenged by neoliberal policies. New political forces demand an ambitious program of institutional reforms to strengthen democracy and support greater pluralism and accountability. In response to that, Mexico appears to be undergoing a fundamental transformation of its political culture. The corporatist patterns of political participation that were promoted by the PRI during its sixty-year period of undisputed rule are being replaced by more liberal forms of civic associations. Recent electoral reforms and opposition victories at the state and local levels suggests that Mexico is in transition from a one-party authoritarian system to a multiparty democracy (Merril and Miró, 1997; Alcocer, 1994; Klesner, 1994). During the first half of his term, President Zedillo took significant institutional and political reforms to weaken the historically strong link between the PRI and the state. Included among the most important political reforms were:

- Fairer access to public financing and improved controls over campaign expenditures;
- constitutional autonomy for the Federal Electoral Institute;
- incorporation of the Federal Electoral Court into the judicial branch;
- a judicial mechanism for the protection of the political rights of citizens and constitutionality of electoral laws;
- new mechanisms for integrating Congress, with greater emphasis on proportionality;
- extension of the right to vote to Mexicans who live abroad;
- direct election of the Governor of the Federal District; and

- broader duties and responsibilities for the Federal District's legislative assembly (IDB & IIC, 1996).

The institutional changes sought to ensure that the rule of law prevailed in Mexico. Among the institutional changes the reforms provided for:

- Strengthening of the legislative branch. The reforms seek to create a relationship of mutual respect and co-responsibility with Congress and the political parties represented within Mexico's two chambers.
- Strengthening of the judicial branch. The reforms seek to strengthen the constitutional system of separation of powers through a major overhaul of the judicial system.
- Greater judicial independence and administrative improvements. The idea is that the judicial system operate efficiently and within their areas of responsibility.
- Improved public security systems and law enforcement agencies. In promoting greater effectiveness and accountability among the nation's police forces, the reforms establish the legal foundation for a national system of public safety that sets forth rules governing participation by the federal, state and municipal governments in a national police safety system; and establishes professional criteria for the evaluation and promotion of police officers (IDB & IIC, 1996).

In a change that fortifies Mexico's federalist system, municipal governments can now request the intervention of the supreme court to defend their interests and autonomy in regards to the actions of both states and the federal government. Municipalities will now have in the supreme court a decisive protector of their constitutional rights.

The New State

The role of Mexico's government in the development process has certainly undergone profound changes. In practice, the central factors in this process of change are related to: (1) the changing size, organization, and operation of the productive and administrative structure of the government; (2) budgetary, fiscal, and taxation measures; (3) privatization policies; and (4) changes in economic legislation and social policy (Valdez-Ugalde, 1996). In economic terms, the state's role was restricted to "guidance" of the economic process and to intervene only in those "strategic areas" that were specified in the Mexican Constitution. The government is now viewed as agent of economic security, functioning to counter market distortions, and ensure price stability, as well as maintain its more traditional role and act as an enforcing instrument to maintain law and order. In addition, government utilizes the power of taxation and spending (fiscal policy) to generate revenues for programs initiated for the collective good and assist in setting monetary policies to promote steady economic growth (Fik, 1997).

The reorganization of the state apparatus included the following changes: (1) deep privatization and deregulation of policies; (2) federal budget reduction and balanced public finances; (3) municipal reform that relieved the central government of many of its budgetary obligations to local governments; and (4) the encouragement of a new federalism through the decentralization to state governments of basic health services and education; and the relief of the central government from many budgetary obligations to local government (Valdez-Ugalde, 1996). In this sense, a new set of actions and responsibilities at the different

government levels is defined. States and municipalities are called to be important agents in the promotion of economic development.

With this significant restructuring of the state apparatus, Mexico expects that the government, at all levels, will play a prominent role in its expectations of international competition and economic growth.

The New Federalism

Federalism is, in essence, a form of government in which public authority is divided between two or more constitutionally defined orders of government (MacPherson, 1994). It is a concept and a form of government which has become popular in these moments of economic globalization and regional integration. Gorbachev (1994) suggests that a discussion on federalism should take into considerations three trends operating simultaneously in today's world. First, the current economic integration reveals great potentialities for production-growth essential for the well-being of people. Secondly, nations and ethnic groups want to preserve their own identities, sometimes the smaller the group, the more vigorously its goals are sought. Thirdly, the desire of nations and ethnic groups to preserve their identity is being widely exploited by ruling elites to attain their political ambitious. In this sense, in the emerging borderless world economy, it is increasingly becoming apparent that nation states are too small to tackle something as large as globalization, and too large to address small things such as ethnic preservation issues. In other words, nation states are fast losing control of some of their areas of traditional control and regulation such as regulation of external trade, telecommunications, financial transactions and corporate taxation. National governments are also experiencing diminished

control in their ability to control the flow of goods and services, ideas and cultural products (Shah, 1997; Ohmae, 1995). These difficulties are motivating nation states to encourage confederate initiatives in two directions: (1) relinquishing responsibilities to supranational institutions such as the WTO; and (2) relinquishing responsibilities to state and local governments.

Breaking with the former state in Mexico entails plenty of problems. By law Mexico became a federation in the 19th century; however, in practice it has operated as a centralized government since that time. Nevertheless, the subject of new federalism is relevant not only to Mexico, but also to the entire global community.

Decentralization

The immediate challenge for the new federalism in Mexico is to define the rhythms and nature of the decentralization process because, given that federalism and decentralization are not synonyms, in the case of Mexico a deep decentralization process is required in order to reach a new federal equilibrium. According to the World Bank (1997), decentralization means the following: (1) administrative deconcentration, or the transfer of state functions from higher to lower levels of government while retaining central control of budget and policy making; (2) fiscal decentralization, or the ceding of influence over budgets and financial decisions from higher to lower levels; and (3) devolution, or the transfer of resources and political authority to lower-level authorities that are largely independent of higher levels of government. In Mexico it is still rare to observe a decentralization case where these three characteristics are present. However, there are many places where this

process has reached significant progress. The rising demand for decentralization in Mexico has come as part of the broader process of liberalization, privatization, and other reforms, implemented by the Mexican government.

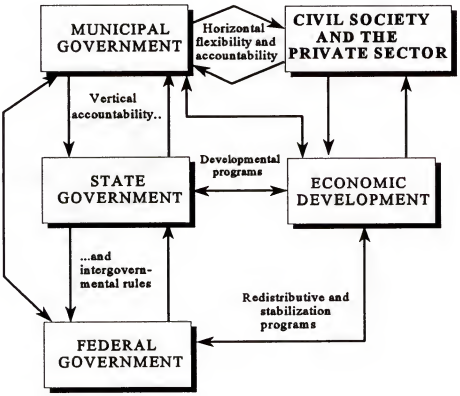

Figure 7-1 Vertical Rules and Horizontal Incentives Shape Local Government's Capability.
Source: adapted from World Bank (1997c), p.123.

The clearest and most important principle driving decentralization is that public goods and services should be provided by the lowest level of government that can fully capture the costs and benefits (World Bank, 1997). In this sense, depending on the institutional environment, decentralization can improve state capability by freeing it to focus

on its core functions at the different levels, developing a network system which allows them to work in a more organized and synchronized fashion (Figure 7-1).

The World Bank suggests that decentralization is unlikely to work without effective institutional arrangements to foster flexibility and accountability at the local level, and fiscal restraint on the part of both local and national governments. This is best explained in terms of two separate but interrelated sets of relationships facing local governments (Figure 7-1). First, there are horizontal relationships between local government and citizens, private business, and NGOs. Local institutions (formal or informal), for example local elections or referendums, can create or influence such relationships, providing incentives for cooperation, accountability, and improved local government performance. Secondly, there are vertical relationships between levels of government. For example, there are formal institutions that define the role and functions of each tier of government, particularly as they affect intergovernmental fiscal relations. Both vertical and horizontal incentives are essential if local governments are to perform their functions well.

Some of the ways in which horizontal relationships can encourage local governments to enhance their responsiveness, mobilize resources, improve service delivery, and stimulate private sector development are:

Citizen participation. Greater citizen participation in elections of representatives at different levels of government will increase the number of political choices, thus stimulating competition between levels of government. Local participation can also mean greater confidence in and acceptance of policy decision by constituents. It also encourages more involvement of population in planning actions such as program formulation, budget

elaboration, community participation, and so on. For example, in Xico, a town located some 32 miles to the southeast of Xalapa, capital of Veracruz, decentralization has created opportunities for major community participation. It also stimulated the reappearance of indigenous mechanisms of social participation such as the *faena* (unpaid physical or manual work done by the people in contribution to the well-being of the community). This experience is particularly important because it combines a traditional organization framework with modern programs of municipal management (Cabrero Mendoza, 1996b).

Local services provision. As a result of decentralization, some resources and responsibilities have been transferred to local authorities. In Mexico this is the case of education and health services. Despite this welcome authority and the fact that local government did not have expertise in the administration of these services, innovative and creative experiences have been evolving surrounding these new responsibilities. For example, in Teocelo, a town located some 30 miles to the southeast of Xalapa, capital of Veracruz, decentralization has created opportunities to more efficiently organize resources for public health by identifying the population's needs and designing strategies to foster participation through community organization and health education. As a result, coverage increased for both preventive and curative care, the quality of services improved enormously, and infant mortality rates fell. In addition, users of health facilities reported that the attitudes of health personnel and the quality of services improved greatly (World Bank, 1997c).

Local economic development. The participation of local business can also play a crucial role in decentralization, shaping incentives at the local level. In order to spur economic growth, private firms and public officials are called to cooperate. A better

understanding, communication, and cooperation between private and public actors will contribute to a more favorable local environment to do business. A local government that provides and maintains credible frameworks for local economic development ends up promoting private investment.

Distinctive areas of competence for each level of government with respect to economic development are also included in Figure 7-1. A functional theory of federalism introduced by Peterson (1994) identifies two main economic purposes of domestic governments as developmental and redistribution and stabilization. Developmental programs provide the physical and social infrastructure necessary to facilitate economic growth, while redistribution and stabilization programs deal with the reallocation of societal resources and the performance of the economy under an environment of harmony and stability .

The Need for Local Governments

For federal governments to function effectively, the division of responsibilities among levels of government must respect the comparative advantage of each level of government. According to Peterson (1995) the national government should assume the primary responsibility for distribution and stability, while state and local governments assume primary responsibility for development. He considers that local governments are best equipped to design and administer development programs because their decisions are disciplined by market forces as well as by political pressures. In other words, local governments must be more sensitive to market considerations when designing and administering roadways, public safety services, sanitation systems, and educational programs.

The incorporation of local governments into a federal system provides the following advantages: (1) their existence encourages the emergence of geographically concentrated homogeneous subpopulations despite a heterogeneous national population; (2) given the closer proximity to their constituents, local governments face lower informational barriers in discovering local tastes, preferences, and needs; and (3) in the absence of perfect information regarding policy consequences, local governments can serve as relatively low-cost laboratories for policy experiments and thus generate additional information regarding which kinds of public policies may have positive outcomes (McKinnon and Nechyba, 1997).

The New Role of Government in Economic Growth

Everybody is concerned that the Mexican government should play a more relevant role as a sponsor of economic growth, but what is not clear at all is what is the best way to do that. An important lesson from the recent past is that government failed as economic agent; it does not control national competitive advantages. In the best case it can only influence competition. Nevertheless, the new economic strategy demands improving the capability and effectiveness of the state. The problem is that building capability is something that will take some time and careful attention. Even more, there exists a consensus that national government, on the whole, is the least efficient provider of development policies, but development policy cannot be an exclusively local prerogative. The best way to surpass these difficulties is to realize that economic development is a complex issue where the

government, at all levels, has an important role to play. The challenge is that each level of government focuses on those responsibilities for which it is best adapted.

Porter's diamond provides a series of relationships about how the government can influence in the generation of competitive advantages. The understanding of these relationships and their enhancement can offer policy makers guidelines for identifying a state's competitive advantages, the resources that support it, and the public initiative that can sustain it. Porter establishes that the central goal of government policy toward the economy is to deploy a nation's resources (labor and capital) with high and rising levels of productivity. He identifies productivity as the root cause of a nation's standard of living. In this sense, to achieve productivity growth, an economy must be continually upgrading. This requires the continuous improvement and innovation of existing industries as well as the capacity of new industries to compete successfully. The appearance of new business into the economy is necessary to create jobs for new persons entering in the labor market, to replace any jobs freed up by increase in productivity gained by other firms and to replace those jobs lost in less productive business that become uncompetitive.

Under these conditions, Porter emphasizes that the proper role for government policy is to stimulate such dynamism and upgrading. Government's aim should be to create an environment in which firms can upgrade competitive advantages in established industries by introducing more sophisticated technology and methods and penetrating more advanced segments of the economy. Government policy should also support the ability of the nation's firms to enter new industries where a more sustainable productivity relative to natural and human resources can be achieved.

The influence of government policy on the diamond's determinants is shown in Figure 7-2. At the local, state, or national level, the government can influence competitive advantages in an industry if its policies influence one or more of the four determinants. The challenge for the government is just to identify the adequate strategy and mechanisms to do that, and then focus on reaching those goals.

Government Effect on Factor Conditions

There is a wide range of government policies that can contribute to the creation of national advantages for the industry. Among them, education policy, health care policy, research and development policy, antitrust policy, fiscal and monetary policy, and many more which are all relevant. There are also aspects which government is unable to deal with directly but which it can influence indirectly, such as the competitive behavior of firms. In this sense, what is fundamental for policy makers and researchers is to understand the real role of the government in generating competitive advantages for the industry, focusing on how to examine the way government policies affect each determinant in the diamond. To describe the array of policies that can affect each of the determinants is beyond the scope of this dissertation. Instead, a brief description of the government's effect on factor conditions will be made, focusing on those aspects most important to the objectives of this research, factor creation.

It is possible that among the most important and influential roles of government policy is creating and upgrading factors of production, whether they are skilled human resources, basic scientific knowledge, economic information, or infrastructure. Government

is often seen as the principal engine of factor creation. It does bear responsibility for important areas such as the primary and secondary education systems, basic infrastructure, and research in areas of broad social concern such as health care, food security, social security, among others.

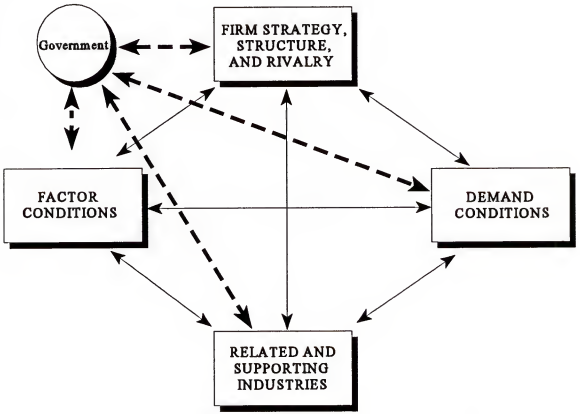

Figure 7-2 Influence of Government Policy on Diamond's Components.
Source: Adapted from Porter (1991).

Some of the mechanisms utilized by government include specialized education and training programs, research efforts in universities closely connected with the industry, trade associations activities, and most important, to promote the private investment in research and training of firms themselves. Under these conditions, an environment where government and

firms invest in factor creation will be built. Education and training, research and development, infrastructure, and information systems, are the vital means to stimulate factor creation and upgrade competitive advantages in industry.

Education and Training

A nation characterized by a continuous upgrading of its economy is a nation where the quality of human resources must be steadily rising. The reason is that to compete in more sophisticated and competitive markets demands human resources with improving skills and abilities. In pursuing a goal of human resource development, improving the general education system is an essential priority of government. Technological capability is essentially embodied in people, not in machinery. In the process of acquiring, using, diffusing, improving and developing technology, a key input and question is whatever the human capital base is able to assess and decide on technology matters. This requires a well developed education system that lays the necessary foundation at all levels. It also requires more on-the-job training, in order to continuously upgrade skills to keep up with rapid changes in technology and competition (Dahlman, 1994; Bealieu and Mulkey, 1995). The capacity of higher education to interact with and respond to these development challenges is often constrained by institutional bureaucracies, rigid personnel systems, and reduced funding.

In terms of Dahlman (1994), a good educational system will be understood at two levels, at the university level and at the primary and secondary level. At the university level, it is necessary to have qualified personnel who can monitor technological and other trends,

assess their relevance to the country and individual firms, and help to develop strategy for reacting to taking advantage of the trends. In addition, high-level technical human resources are necessary to assimilate, adapt, improve and develop local technology that may be more appropriate or otherwise superior to what may be obtained from abroad. Continuous education is another important element at this level. Education does not end when the student gains the degree; innovation is a continuous process taking place through time. In this sense, professionals, technicians, and employees in general require a permanent and sustained training program which allows them to be updated with changes in technology.

Training in the use of technology usually has not kept pace with the availability of the technology. In this sense, it is common to observe a lag between people's skills and new technology requirements. Technologies that are developed apart from the people who use them may, however, not be as productive as they might become if they benefit from the users knowledge base also. The application of appropriate and well defined new technologies is necessary to expand productivity.

At the primary and secondary levels, good basic education, including a strong concentration in technical and engineering-related areas, is necessary to make local adaptations and improvements on the shop floor, and more generally to increase the awareness of and ability to take advantage of technological opportunities.

Research and Development (R&D)

An upgrading economy demands a steadily rising level of technology. In a context of rapid change and increased international competition, technological change allows a country or region to react and take advantage of the opportunities offered by new

technologies and new forms of organization. In this sense, to stimulate improvements in science and technology is a major role of government. Research and development are tasks that cannot be left solely to firms because the benefits to the national economy exceed those to individual firms due to spillover effects.

Supporting public research institutions (universities and institutes) is a key. The rationale here is that there are economies of scale to be obtained in undertaking some research, as well as risk and uncertainty as to the successful outcome of the research. In pursuing scale economies in research, the research university system offers a number of benefits in stimulating a rising level of productivity in an economy. In the United States, the research university system is the great strength of the nation and accounts for much of its competitive success in new business.

Encouraging enterprises to undertake more research is the challenge. According to Porter, the most important influence on innovation comes from the R&D efforts of firms. The reason is that firms themselves must apply technologies to the needs of their industry. Federal, state and local governments can promote R&D in enterprises utilizing some of the following means: fiscal incentives, grants, and the establishment of special institutions to finance R&D. The use of these means can take many forms and vary from nation to nation. However, some of the most effective means seem to be those where the industry and firms are partially involved, such as partial funding of specialized research institutions connected to industry clusters, partial subsidization of research contracts between firms and research institutions, particularly for small firms.

Fostering closer interaction among universities, research institutes, and firms, stimulates technology development. The importance of fostering interaction among these three groups lies both is stimulating the development of new knowledge and in faster application of that new knowledge in the productive sector (Dahlman, 1994). In real life these networks of interaction can develop naturally over time; nevertheless, government can stimulate or accelerate their development. For example, many governments provide grants or fiscal incentives to projects that involve joint research among firms and between firms and universities or research institutes.

Infrastructure

Upgrading a nation's industry depends on improving infrastructure services. Indeed, infrastructure services such as power, transport, telecommunications, provision of water and sanitation, and safe disposal of water, among others, are central to the activities of households, firms and the industry to operate. To provide these services to meet the demands of business, households, and other users is one of the major challenges of economic development. Both firms and governments have a role in creating and upgrading infrastructure, however, governments have historically played the major role.

Infrastructure is recognized as a necessary precondition for economic growth, although not sufficient, because it requires adequate complements of other resources to work well. Actually much infrastructure consists of networks. In this sense, provision of adequate quantity and reliability of infrastructure is a key factor in the ability of countries to compete in international trade, even in traditional economies. For example, about two-thirds of production and sales in the OECD countries are processed directly to order, and "just-in-

time" delivery of product has become the norm in many sectors (World Bank, 1996). This trading system has been developed thanks to the advances centered on the management of logistics (the combination of purchasing, production, and marketing functions) to achieve cost savings in inventory and working capital and to respond more rapidly to customer demand. Cost reductions and the increased speed of freight movements have also been based on multi modal transport involving containerization, which requires intensive coordination by shippers across rail, port, air, and road freight modes.

The competition for new export markets is especially dependent on high-quality infrastructure. During the past two decades, increased globalization of international trade has arisen not only from the adoption of free trade policies in many countries but also from major advances in communications, transport, and storage technologies. Virtually all the improved practices designed to reduce logistics costs have been based on information technologies using telecommunications infrastructure.

In this sense, if infrastructure investment is not sufficient on its own to generate sustained increases in economic growth, it is because its effectiveness depends on characteristics such as quality and reliability, as well as on quantity. Matching supply to what is demanded is essential. For a developing country like Mexico, wishing to compete in global markets, the implementation of an aggressive and informed infrastructure construction and maintenance program, with the characteristics described above, which provide economic support to economic activities, is necessarily required.

Information System

The stock of information in a country is created by numerous of sources such as technical publications, company documents, patent records, public information publications (yearbooks, census), private information providers, and the press, among others. Around the world, new information and communication technologies are increasingly affecting societies, governments, industries, communities, and individuals. The information revolution is producing astonishing transformation in virtually all spheres of human activity. In economic development, the amount and quality of information available in a country is of significant importance. Information is a means to monitor and evaluate the performance of economic policies as well as the trend of economic variables through time. Porter (1996) emphasizes that information is integral to the upgrading of competitive advantages in established industries; it is integral to the appearance of new firms into the industry; and it is indispensable for any firm (old or new) in planning for and forecasting future economic conditions. Information about markets, technology, and competition shapes the decision of firms.

The current information revolution is transforming the way firms, households, and government in general works. Some countries are taking advantage of the information age to foster economic development, but others are lagging in this concern. As a result, this revolution is creating a divide between the information-rich countries and the information-poor nations. The information-poverty situation of the developing world includes unreliable information, poor information support, weak data on performance, limited access in rural areas, and limited access to resources for professionals and researchers, characteristics that

in practice become serious barriers for planning, research and development. In such nations, governments can play a prominent role in developing the information base by expanding the stock and quality of information available to firms and improving the data collection and processing systems. In doing so, universities, research institutes, and education institutions can contribute significantly. The challenge is to encourage strategic alliances among these institutions and to expect that the work be done well.

The potential benefits of developing the information base are almost without limit. For example, information technology can bring knowledge and skills to any location. It costs less than conventional means (once investment costs are made), is up-to-date and can be more accurate, and it requires less investment in time and travel, and less physical infrastructure. The challenge is to develop a data base and data collection and processing system first.

Summary

The adoption of an export-oriented economic strategy as the economic growth driving force in Mexico implied the dismantling of many of the reforms and institutions emanating from the revolution. Indeed, the required economic and political restructuring necessary to make this economic strategy feasible demanded a set of internal reforms which, in practice, would transform the old institutional framework toward a new, more favorable, institutional environment. In this sense, at the end of 1991, the last remnants of the land reform program of the revolution were weakened, if not eradicated; public enterprises were

sold to the private sector; a further reduction of the limited welfare provisions and a "fire sale" of public assets were implemented, among other measures. Nevertheless, the most important change has been taking place in the conceptualization and functionality of the state and government. An economically active state supported by a strong federal government and a one-party political system apparently is no longer the fashion in Mexico. This new orientation gives the state a role of "guidance" of the economic process, with major attributions only on those considered as "strategic areas", and the government is now viewed as an agent of economic security. Into this new redefinition, a new federalism and economic decentralization are strategic actions which should stimulate economic growth at the regional and local level.

In this market oriented economic strategy, market forces are responsible for generating economic growth; however, the government has an important role to play in helping to generate socio-economic capabilities and to accelerate the process of balanced and sustained economic development. Its contributions in the generation and creation of externalities favorable to the performance of the strategy could make the difference and represent the success or failure of this strategy.

The redefinition of this new institutional environment into the state and government, as well as this set of new relationships between the government and the market are tasks that are going to require time and much attention. Internal and external forces will be a constant source of pressure and instability and will be challenging continuously the feasibility of this strategy. A state such as the state of Veracruz with its diversity and linkages to global markets and global society must be recognized as important in the entire process of

redefinition and transition to a more open Mexican economy. As local and state institutions become more actively and successfully involved the revolution of the twenty-first century may exceed that of the early twentieth century. In real terms this must occur.

CHAPTER 8
THE ROLE OF ECONOMIC ANALYSIS IN POLICY-MAKING IN VERACRUZ

Introduction

There is consensus that the experiments of the 1980s and 1990s, labeled as export-oriented strategy or neoliberalism, have transformed the national, local, and regional economies in Mexico. The dynamics of these changes have been different for each particular region and economic sector. Indeed, economic sectors are reacting differently in response to the impacts associated with structural reform measures. However, no one of the sectors can be considered in isolation. That is, economic activities in the primary sector, while different possibly in magnitude and intensity, are similar to those in other sectors of the economy. Consequently, in evaluating the effects of various agricultural policies, it is necessary to understand how economic activity is coordinated in a market economy. Government can play an important role in support of monitoring and evaluation activities through universities and research institutes. The idea is to join efforts and decidedly initiate the analysis and discussion of important information that is being continually generated by the set of reforms implemented by the government.

A New Participatory Process in Political Economy

As the earlier discussion on new federalism and the new economic strategy suggests, it is expected that regions and local communities pursue development policies that complement national economic objectives. In this new regional/local economic development strategy, it is important that every community and region pursue economic policies that, first, enhance or facilitate local industries with international potential, and, second, meet the employment needs of the majority of community residents. Under this new point of view, communities of all sizes have an important role to play in helping municipal, state, and federal government agencies to assist new firms in establishing, expanding, and competing for domestic and overseas markets. Communities in Mexico, however, differ widely in most aspects relative to this role. For example, the economic base among them varies significantly. There are communities which offer growing opportunities for business and commercial growth, which are responding positively to changing economic conditions. There are other communities in isolated rural areas with declining economic and/or population bases, for which economic development may not be a relevant or meaningful activity.

In this sense, local economic development becomes something more complicated. The broad diversity of communities and social groups throughout the country demands from social planners and decision-makers in-depth knowledge about community economic potentialities, limitations and capacities for economic reactivation. Given that local

development planning sees communities and regions as the essential building blocks of the national economy, the basic planning approach should take into account these differences.

In order to discuss these community level economic development issues in more detail, the House model is introduced in Figure 8-1. This model is a good conceptual tool to explain strategic planning because it helps describe, in a very simple form, the main components involved in the planning task, such as the current situation, the projected situation and the desired situation. It also can be used at the microeconomic and macroeconomic level of analysis.

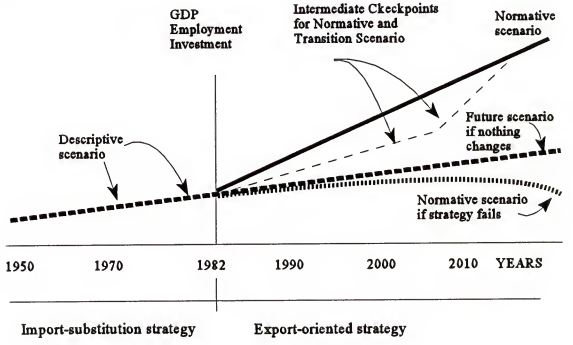

Figure 8-1 Mexico: Toward and Export-Oriented Strategy.
Source: Adapted from McDermott and Andrew (1998), p. VII-4.

Assume that Figure 8-1 summarizes the change from an import-substitution strategy toward and export-oriented strategy. Also assume that the switching point is located in the year 1982, the point where change occurred from the import-substitution to the export-oriented strategy. The vertical axis, whose origin is the year 1982, includes relevant economic variables/criteria subject to evaluation, such as GDP, employment, investment, productivity, income generation, income distribution, and so on. The descriptive scenario (DS) describes the current situation of these variables and evaluates the forces on which it is based. The future scenario (FS) is the projection of the current situation and trend of the economic variables into the future, with no policy and action taken to change the course of these trends. The structural change sought by the Mexican government can be represented by the normative scenario (NS). This scenario is the target. It includes objectives set by the relevant programs or policies. It is desired that all the efforts be oriented to reaching this normative scenario.

A potential result of the normative scenario if strategy fails is also included in the figure. It depicts the future trend of these relevant economic variables if the objectives of the programs and policies are not attained. It is possible that under certain conditions some variables/criteria experience an economic trend worse than that observed without the change. The challenge here is to know if this unexpected trend is temporal and unavoidable, or if it is the result of inappropriate policy application. A final component of the picture (Figure 8-1) is the transition scenario (TS). It describes the trend of the economic variables/criteria during the restructuring process. It is possible that a gap between the TS and the NS appears during the period that the policy is being implemented. Intermediate checkpoints for NS and TS

will provide information about this gap and also will provide highlights about potential policy adjustments to the plan.

From the economic information presented in chapters 4 and 6 it is possible to observe that some of the macroeconomic variables, such as employment, GDP, inflation, among others, have experienced an economic trend which, in some sense, looks similar to the one described by the normative scenario when the strategy fails. In other words, the transition scenario for these variables is following a trend which is far below the normative scenario expected by the government. This situation has generated a definite popular reaction in Mexico about the feasibility of this new economic strategy as a means to solving the country's economic growth problem. There is not, however, enough research to fully explain this situation. More doubts than solutions are in the minds of many Mexicans. Is this transition trend normal? Is the economic recovery coming soon? How long is the transition going to last? These are some of the questions that the Mexican population is concerned about for which obtaining good answers remains difficult.

Monitoring and Evaluation

The straight line describing the trend of the normative scenario in Figure 8-1 is an envelope line. It depicts the optimal trend (an aspiration) that an economic variable could attain as a result of the implementation of an economic policy. In reality, it may be very difficult to find a variable that would experience optimal behavior. In general, most of the variables experience trends in the range between FS and NS. For program management and policy adjustment purposes, monitoring and evaluation of intermediate checkpoints becomes

crucial to determining progress and success in achieving the normative scenario. Timely monitoring will help to keep watch over the plan to see that it is on track and to take corrective actions if it is not. The information derived from the monitoring process will allow social planners to re-evaluate the strategy and actions according to plan. Monitoring consists of observations and data gathered to compare the current trend against pre-set targets or standards. In this sense, available and appropriate data become crucial ingredients for a useful monitoring process.

Over time, after completion of a monitoring period, an evaluation procedure is required. At this stage, decisions have to be made. Adjustments to the original objectives, re-definition of economic strategies, re-adjustment of the economic and social policies, are actions involved in the evaluation process. According to McDermott and Andrew (1998) evaluation is a process that requires a value system, a metric, a sensing procedure, and a scheme of analysis (Figure 8-2).

UNITS	VALUES goal/objective	METRIC what to measure	SENSING how to measure	ANALYSIS monitoring and evaluation
FEDERAL				
REGIONAL				
INDUSTRY/AGRI-BUSINESS				
FIRM				
HOUSEHOLD				

Figure 8-2 Evaluation Matrix
Source: adapted from McDermott and Andrew (1998), p. V-9.

Value system is the set of goals and objectives as well as the bases for the criteria that conform the target in the normative scenario. The column for the value system in Figure 8-2 contains a list of the economic development values at several levels of aggregation. The characteristic of this column is that there exists integration and complementarity between objectives and goals from the bottom to the top and from the top to the bottom. For example, an objective at the industry/agribusiness level can be the raising of sugar cane yield in Veracruz. This objective is compatible at the national and regional level with a policy of self-sufficiency in the production of agricultural products; at the firm level by increasing the efficiency in the production of sugar cane; and at the household level by increasing the income of the family.

Metric is the means by which the set of values involved are measured. It includes procedures to calculate economic indicators such as employment, price index, price ratio, etc. For example, the measure of sugar cane yield can be done in many terms, yield per unit of land, per hour of work, per worker per year, and it can be computed in tangible terms, physical terms or money terms.

Sensing procedure is the observation and gathering of data and information required by the metric to elaborate economic indicators. In concordance with the value and the metric system, sensing procedure must provide the data required to measure progress toward objectives, goals, and ultimately the expressed values. There are numerous data sources, some published and available, but much is not collected, not published nor easily available, and researchers may search for information sources and make their own data measurement and observations. Microeconomic data are generally not available. Governments focus more

in the collection of macroeconomic data. Qualitative data is rarely available in a useful form. In practice, it is common to encounter difficulties when gathering data to fulfill a metric. When this happens, it is possible that the metric may have to be changed, or even that the response to the value system has to be modified. In any case, the evaluation matrix introduces an iteration procedure which allows for the movement back and forward through the rows of the matrix adjusting or modifying the components of the columns. There is risk involved in choosing a metric on the basis of ease of gathering data, but sometimes researchers are forced to do it because of time, resource and skill/tool limitations.

Analysis is the handling of the data collected and the utilization of economic indicators estimated. At this level, study, conclusions, and recommendations are accomplished for use in decision-making and action programs. If the data on the metric is precise, and the relationship between value, metric and sensing is so good, once data is available and statistical analysis is defined, evaluation is complete. The measurement and analysis task may also continue as a monitoring process or appear again in a major evaluation. In the analysis process, sophisticated and complex methodologies can be used to perform economic analysis according to a given theoretical framework such as econometric models (time series models, cross section models), general or partial equilibrium models, input-output models, among others.

Given the relevance of sensing (data gathering, data processing and statistical application) and analysis to facilitate the monitoring, evaluation, and decision-making process, in the next section these topics are discussed in more detail for the case of Veracruz.

Information and Analytical Requirement

The economic changes occurring in the Mexican economy in recent years carry implications for the analysis process, sensing procedure, and metric system. Yet as events unfold, there is a tendency to utilize existing indicators to evaluate and explain new economic realities, or to use existing methodologies to calculate indicators that differ significantly from the economic reality that they are now trying to explain. In other words, a degree of conceptual obsolescence with respect to data collection and statistical processing in the context of reality and the subject of analysis is observed[1]. As a result, a gap between the dynamic economy and the statistical system responsible for cataloging this economy has been growing.

Emerging policy needs have exposed limitations and gaps in the array of economic statistics on the Mexican economy and the ability of analysts to fully assess the implications of policy changes. Evolution is taking place in the economic conditions in which the Mexican economy finds itself, in the technical nature of production systems, in the perception of problems that need to be addressed, and in policies directed at all economic sectors.

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[1]For example, the current unemployment rate reported for Mexico is around 5%, which is relatively low. However, it is not clear under what kind of assumptions this indicator was calculated. Is the population involved in the informal economy considered as employed? Were those children and adults selling bubble gum on the street, washing windshields in cars, clowning at stoplights or begging (which is better than stealing) taken into account to estimate this rate? If the answer is yes, then this number will be accepted as true. However, its acceptance will raise a new set of questions that are relevant and related to the minimum income level required for a family.

In the agricultural sector these gaps may become even wider. For example, there exists wide variation within the agricultural sector between farms of different types, sizes or regions with respect to their income situation. A study of poverty among agricultural households demands information on the distribution of income; a satisfactory overall average income shown in sector accounts may well hide a wide distribution and substantial numbers of cases in the low income categories. Poverty may be associated with farms of particular sizes, types and locations or particular sets of socioeconomic characteristics (age, education level, etc).

In agricultural production a similar situation prevails. Farm survey data coverage usually concentrates on larger businesses that are responsible for generating the great majority of agricultural output. This situation has led to the overestimation of some macroeconomic indicators, such as total factor productivity, and to the underestimation small farms whose contribution to the total GDP is marginal or does not exist. Evenmore, relatively little is known about these small farms, however, they are responsible for generating employment, income and food for the majority of the rural population. In thissense, these excluded units, while perhaps not important in the context of policies that are primarily concerned with production, or even land use, may well be of greater relevance to policies with aims that are more social in nature (such as income support and rural development).

When turning to microeconomic data on agricultural households that could be used to further explore patterns found in the aggregate accounts for the agricultural households sector, the situation is far less satisfactory. Data relating to the overall economic activity of

households that occupy farms are incomplete. At this level, a dearth of systematic, regular and reliable information and analysis is observed. Over and over, however, there is increasing recognition among the market forces and government that, in order that policy be serviced adequately, aggregate statistics need to be complemented by microeconomic data. Adequate policy analysis cannot be based on aggregate data alone. Narrowing the gap between microeconomic and macroeconomic data, and updating the statistical systems of data collection and processing will result in the estimation of better economic indicators as well as greater certainty and proliferation of economic analysis studies at the commodity level, at the regional level, and at the global level.

An economic development strategy supported on local and regional capabilities is something relatively new for Mexicans. It introduces a new participatory approach by looking inside the community and region for the objectives, resources, methods, and personnel available to build the economic and employment base. According to Blakely (1994) the information requirements for this kind of strategy can be divided into two segments: (1) socioeconomic base and (2) the community and region's development capacity. With respect to the socioeconomic base, the information is needed in five broad subject areas[2].

Demographic area. This area includes aspects such as the major characteristics of the local population; particular assets of the population; potential areas for improving population profile; and other assets of or constraints posed by the population.

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[2]These subject areas are informed by the Porter's factor conditions and factor creation recommendations as discussed in Chapter VII.

Employment area. In this area are the aspects such as characterisitcs of the existing labor force; employment requirements of the current labor force and future trends; education and training programs to satisfy the employment requirements; special groups requiring employment attention.

Economic structure area. This area includes current patterns and trends of the local and regional economy; weak sectors in the economy; economic diversification opportunities and requirements; economic growth areas; physical infrastructure to support economic growth; educational and research infrastructure to stimulate factor productivity; appropriate information systems for a better economic planning and decision making process.

Regional and community factors. This area involves aspects such as strong regional and community assets such as physical infrastructure; education, research and extension infrastructure; assets requiring attention such as information systems, banking systems, transportation systems; cohesiveness of regional and community leadership.

Physical/locational condition. This area includes aspects such as major physical resource assets; strengths of geographic situation and locational conditions; and weak aspects of local physical conditions. The idea here is to identify the local comparative advantages of the community or region and, through a collaborative work with government and other institutions, to orient efforts in order to transform these comparative advantages into sustainable competitive advantages for the community in a global context. Physical resource assets will be a long-term competitive advantage in the production process only if they are continuously upgraded.

With respect to the community and region economic development capacity, the analysis of the local institutional profile is required. Successful local and regional economic development requires ensuring that the appropriate institutional systems are in place that function effectively within the local institutional context. In this sense, information on the local and regional institutional system will be needed. This information includes aspects such as community-based institutions; economic structures; political institutions; financial institutions; and education and training institutions. A good working relationship among these institutions are essential because they all have a participatory role to play in the local and regional economic and employment development process.

Types of Data Requirements

There are two general types of data collection: primary data and secondary data. The first one involves data collection systems performed by the user or institution requiring the data. Among these collection systems are: (1) surveys, which are a useful method to fill information needs or to obtain information on a specific topic; and (2) tapping local personal knowledge. Within the communities, there are persons who have accumulated information generationally as well as information embodied in community culture, household behavior, farming systems and other employment systems. The knowledge and ideas of individual sources can contribute enormously to the local and regional economic development. Personal interviews, public hearings, and neighborhood meetings are some of the mechanisms to catch this kind of knowledge. The second information source involves the

location and use of existing data. This includes data records held by local planning or services agencies as well as the use of aggregate data in time series and other formats.

Although the details of data gathering for local economic development will vary among local government areas, the basic tasks to be performed will in most cases be similar. The methods selected should be based on goals, rather than determining the goal after the data are available. There are some prerequisites, however, that the information should meet, such as (1) the data collected should be comparable. Data alone may be totally meaningless unless the users can readily equate (or validate) it with other data. (2) The data collected should be consistent, i.e., the ability to reduce information to a "common denominator" is crucial. (3) The data held must be accessible to rapid retrieval. Information buried in an antiquated filing system may be selective, comparable, and current, but it will be of no value if it cannot be retrieved when needed (Blakely, 1994). (4) Data should be relevant. That is, data should measure as precisely as possible the relationship for which it is concerned about. Excellent data does not help if it does not meet this condition.

It is important to recognize that the analysis of the community and region's socio-economic base, needs, and development capacity is much more than a process of data gathering. At the end, the ability of researchers, social planners, and decision-makers to combine all these factors in benefit of the well-being of the community and region, will be elements that will start defining the real bases for sustainable economic development at the local level.

Applying Analytical Tools to Economic Development.

Once the local economic development planning agenda has been defined and the target or normative scenario set, the next step is to put in operation the economic policies intended to alter the economic capacity and direction of the locality or region. At this level, one has to know current conditions and the way change might influence the local economy. Monitoring and evaluation processes will help to keep the transition on track or to introduce those required adjustments into the strategy in order to make attainment of the plan feasible. There are a variety of economic models such as econometric models, input-output models, and linear programming models, among others, that can help on these tasks. The use of these models is not free of controversy because they provide only indirect measures of the local economy; however, they can be thought of as being succesful if they help to improve the accuracy with which one can represent reality. In this sense, one must be careful about what interpretations are derived from the model used to assess a local economy's potential and its current or predicted output. Just as data must be relevant, the assumptions set forth in any model must be well understood in light of the current situation. At the end, testing for goodness of fit is testing for assurance that the model is doing what was designed to do. Nonetheless, these models provide useful techniques to perform economic analysis and facilitate the decision-making process.

In this section an input-output model (I-O) will be introduced. The reason is that the I-O model has proved to be a very flexible tool in regional economic modeling, and can be combined with or embedded in almost any kind of analytical framework (Toyomane, 1988;

Richardson, 1974; Hudson and Jorgenson, 1972). The idea is to use it here as an example of several different approaches to illustrate the needs of information existing in Mexico, and how quantitative techniques are important tools to facilitate economic analyses to support the decision-making processes.

Input-Output Analysis

I-O analysis is a method of systematically quantifying the mutual relationships among the various sectors of a complex economic system (Leontief, 1986). It is concerned with studying the interdependence of the producing and consuming units into the economic system and with showing the interrelations among different sectors which purchase goods and services from other sectors and which in turn produce goods and services to be sold to other sectors (O'Connor and Henry, 1975). In order to make such a study, various economic flows are set out in an input-output table (Table 8-1), which is specially designed to provide a concise and systematic arrangement of all economic activity within a state or region. The horizontal rows of the table show how the output of each sector is distributed among the others. Conversely, the vertical columns show how each sector obtains from the others its needed inputs of goods and services. In this sense, the output of each sector is shown to be an input in some other. In practical terms, the economic system to which I-O analysis is applied may be as large as a nation or even to the entire world economy, or as small as a region or even a single enterprise.

I-O analysis divides the economy into two major components, suppliers (or sellers) and purchasers (or users). Each of these can be subdivided as follows. On one hand,

suppliers include (1) intermediate, processing, or producing suppliers; they are producers who must purchase inputs to be processed into outputs which they sell as inputs to other intermediate suppliers or to final users; and (2) primary suppliers. They are sellers whose output is not directly dependent on purchased inputs. The payment to suppliers of primary inputs are final payments because they do not generate further interindustry sales. Payments to these suppliers essentially represent value added. On the other hand, purchasers include (1) intermediate, processing, or producing purchasers, they buy the output of suppliers for use as inputs for further processing; and (2) final purchasers, or final demand, or final users. They buy the outputs of suppliers in their final form and for final use (Bendavid-Val, 1983). Intermediate suppliers and purchasers are one and the same industries or sectors. Their sales and purchases are related to each other, since their purchases of inputs are a function of the demand for their outputs. Primary suppliers and final users may or may not be one and the same. In cases where they are the same, their activities as primary suppliers and as final users are taken as completely independent of each other.

I-O models require of the following assumptions: (1) each industry produces only a single homogeneous commodity; (2) each industry uses a fixed input ratio (or factor combination) for the production of its outputs; (3) production in every industry is subject to constant returns to scale, so that a k-fold change in every input will result in an exactly k-fold change in output; and (4) prices are given (Chiang, 1974).

In doing an I-O study it is necessary to produce three main matrices:

- Transactions matrix
- A matrix of technical coefficients; and

- A matrix of interdependence coefficients sometimes called the total requirements matrix.

The Transaction Matrix

The transaction matrix contains basic data concerning total flows of goods and services among suppliers and users during the study year. The flows are measured in money terms and are viewed as sales transactions between sellers and purchaser (Table 8-1). The components of the I-O transaction matrix are:

Intermediate demand (Z_{ij}) shows the flows of goods and services which are both produced and consumed by the different sectors in the process of current production. These are usually refered to as inter-industry flows.

Final demand (Y_i) records sales of commodities produced in the region by each regional processing supplier to each major, final demand sector. The final demand sector may be consumption by households (C), government (G), capital formation which includes stock changes (I), and exports (E).

$$Y_i = C + I + G + E \quad (1)$$

Factor inputs (V_i) records sales by primary suppliers to regional processing sectors. In other words, it is the income generated by factor inputs in the production process. It includes aspects such as wages and salaries (w), interest paids (r), taxes (T), and imported inputs (M). Thus,

$$V_i = w + r + T + M \quad (2)$$

Rewriting Table 8-1 in matrix form yields the following:

In horizontal matrix form

$$X_{ij} + Y_i = X_i ; \qquad \forall I, j = 1, 2, ..., n \tag{3}$$

In vertical matrix form

$$X_{ij} + V_i = X_i ; \qquad \forall I, j = 1, 2, ..., n \tag{4}$$

Equalizing both equations yields

$$Y_i = V_j; \qquad \forall I, j = 1, 2, ..., n \tag{5}$$

This final expression says that final demand is equal to income generated by the factor inputs (added value). Substituting for Y_i and V_j yields the following

$$w + r + T + M = C + I + G + E \tag{6}$$

rearranging the equation yields

$$w + r = C + I + (G - T) + (E - M) \tag{7}$$

That is, factor income is equal to gross national product.

Table 8-1 A Simple Input-Output Transaction Matrix.

TO / FROM	INTERMEDIATE DEMAND (X_{ij}) 1	2	3 ...	n	FINAL DEMAND (Y_i)	GROSS OUTPUT (X_i)
1	X_{11}	X_{12}	X_{13} ...	X_{1n}	Y_1	X_1
PROCES- 2	X_{21}				Y_2	X_2
SING 3	X_{31}				Y_3	X_3
SUPPLIERS .	.				.	.
.	.				.	.
n	X_{n1}	X_{n2}	X_{n3} ...	X_{nn}	Y_n	X_n
FACTOR INPUTS (V_j) (added value)	V_1	V_2	V_3 ...	V_n		V
GROSS OUTLAY (X_j)	X_1	X_2	X_3 ...	X_n	Y	X

The Technical Coefficients Matrix

The technical coefficients matrix is shown in Table 8-2. This matrix shows the inputs purchases required (direct requirement coefficients) by each intermediate purchaser per unit of output that it produces. These coefficients are computed by dividing through each regional processing column of the transaction table (intermediate demand) by the column total. They describe the quantity of the output of sector *i* absorbed by sector *j* per unit of its total output *j*. A final demand column does not appear because their purchases are not for intermediate use.

Table 8-2 A Simple Technical Coefficients Matrix.

TO / FROM	INTERMEDIATE DEMAND (Xij) 1 2 3 ... n	FINAL DEMAND (Yi)	GROSS OUTPUT (Xi)
PROCESSING SUPPLIERS 1	a_{11} a_{12} a_{13} ... a_{1n}		
2	a_{21} .		
3	a_{31} .		
.	. .		
n	a_{n1} a_{n2} a_{n3} ... a_{nn}		
FACTOR INPUTS (Vj) (added value)			
GROSS OUTLAY (Xj)	1.00 1.00 1.00 ... 1.00		

In algebraical terms the technical coefficients are computed as

$$X_{ij} / X_i = a_{ij} \qquad \forall\, i\, j = 1, 2, ..., n \tag{8}$$

where a_{ij} represent the direct requirement coefficients. Each cell in the direct requirement matrix contains a technical coefficient that indicates the input required by the industry at the top from the industry at the left for each.

Total Requirements Matrix

This matrix is derived from the technical coefficients matrix. It shows the total purchases of direct and indirect inputs that are required throughout the economy per unit of output delivered to final demand by any intermediate supplier.

There are several procedures to compute this matrix, however, the most accurate procedure which is used nearly universally is known as *the matrix inversion method.* According to this method the total requirements matrix can be computed as follows:

From (3) the original transaction matrix was written as

$$X_{ij} + Y_i = X_i \qquad \forall\, ij = 1, 2, ..., n$$

Solving for X_{ij} from (8), substituting the result on (3), and making some arrangements into the equation yields the following:

$$X_i - a_{ij} X_i = Y_i \qquad \forall\, ij = 1, 2, ..., n \tag{9}$$

writing the system in an abbreviated matrix form yields

$$X - A X = Y \tag{10}$$

where A is the matrix of the direct requirements coefficient matrix.

Performing some algebraic operations yields

$$X (I - A) = Y$$

$$X = (I - A)^{-1} Y \tag{11}$$

where $(I - A)^{-1}$ is the total requirements matrix. It is also known as the Leontief inverse matrix.

Some analytical uses of I-O model

The analytical applications of I-O models are too numerous to detail here; however, an attempt is made to summarize the major categories of analytical use for which the technique has been used.

(1) Projections of economic activity. Once the Leontief inverse matrix has been derived, it is possible to project or to estimate future levels of final demand, Y, for each sector and to calculate the levels of output, X, from each sector required to achieve the required goals. Alternatively, it is equally simple to estimate from given levels of output, X, for each sector, the levels of final demand, Y, which may be satisfied (Hewings, 1985).

(2) Impact analysis. Multipliers and input-output tables can be used to measure the results in terms of output, income and employment, of any change in the local economy due to an "impacting agent." This analysis may require manipulation, extension or adjustment of the I-O model (Toyomane, 1988; Hewings, 1985).

(3) Market and structural analysis. I-O tables provide a substantial amount of information relating to the market of the various sectors. Apart from the use of the transactions table as a market information system (Schaffer, 1976), it is possible to determine the extent to which the final demand sales by each sector are responsible, directly or indirectly, for absorbing the output of all sector individually. Other useful structural investigations may be undertaken. For example, the analysis may be interested in determining the extent to which imports contribute to the satisfaction of local final demand.

In particular, the import content (direct and indirect) of regional exports could be an important factor in the planning of industrial location. It is a simple matter also to calculate the extent to which the local economy contributes, in terms of value added, to each category of final demand. In particular, the government may be interested in the local direct and indirect labor content of regional exports (Jensen et al., 1979).

(4) Economic intelligence. Schaffer (1976, p. 80) used the term economic intelligence to refer to the ability of the planning authorities to examine strategic questions relating to regional economic development, by a detailed study of the nature of the regional industries. He suggested that by the use of self-sufficiency analysis, it is possible to identify apparent "missing links or "bottlenecks" in an economy, and thus facilitate strategic planning.

(5) Other uses. Among many applications, input-output models have been employed in the calculation of environmental effects, interregional multipliers, and the separation of price and output effects on income (Smith, 1989). The number of situations to which the technique has been applied continues to increase.

Advantages and disadvantages of using I-O analysis

Drawing upon all of the authors cited in the literature review concerning input-output analysis (this section), a set of advantages and disadvantages of this approach will be summarized. Among the advantages are the following:

(1) I-O models provide a flexible tool, adjustable to wide range of specific needs and compatible with and complementary to many other analytical methods, such as shift-hare and economic base analysis.

(2) It has a descriptive rather than a predictive capability. Indeed, it presents an enormous quantity of information in a concise and orderly fashion, provides a comprehensive interindustry picture, and points up the strategic importance of various sectors. I-O analysis may therefore highlight the true sources of regional growth in a way not possible with any other method of analysis.

(3) I-O models have perhaps been used most to perform selective simulation. This includes, first, simulating the impacts of alternative levels of final demand in specific sectors; and second, simulating the impacts of changes in the regional economic structure that express themselves as altered technical coefficients.

(4) I-O model is self-validating.

(5) I-O model demands a lot of data during the first stages of its construction because it demands cross-section data; however, these data are not onerous. It is basically everywhere because it is known by the people who serve as informants. Once the first I-O model is built, it is much easier to keep it updated.

The process of building the transformation table, the major task in performing an I-O study, may itself yield unexpected benefits or indirect advantages. These advantages include (1) it provides to development staff the opportunities to trace through the economic structure of the region in a systematic fashion; (2) this activity reveals data gaps and provides the opportunity for finding ways of overcoming them; and (3) the data collected for the transitions table are useful for many other kinds of studies.

There are several disadvantages associated with the use of I-O analysis. Among the most relevants it is possible to mention the following:

(1) The most obvious difficulty in using I-O models is the problem of *constant coefficients*.

(2) Several problems are related to *time concepts*. Actual transactions during a single accounting year constitute the basis for the entire I-O structure. Any particular year may involve "irregularities" that bring the reliability of the coefficients derived from the transaction data into question. Such irregularities may include major strikes, passing fads, unusually large inventories, currency devaluations, and any other temporary influences on the regional economy.

(3) Building an I-O model requires enormous amount of information. In this sense, its construction demands that adequate resources be allocated to its support.

(4) Regional I-O analysis is, of course, plagued with the usual problems of disclosure, data reliability, and the cost of data collection.

Summary

Evaluation and monitoring of an economic strategy like that implemented by Mexico in the last fifteen years demand attention. The set of economic and political reforms implemented are generating important flows of information about the economic restructuring of the nation which is not presently subject to measurement, collection and analysis at the same pace that it is being generated. The shor-run impacts of the new policies have resulted in very critical challenges and adjustments for Mexican people. Extensive confusion and uncertainty characterize the transition scenario, and a rising skepticism about the real benefits

and the effectiveness of this economic strategy to promote economic development, has invaded the mind of many Mexicans. How long is the uncertainty going to last? Is Mexico moving in the right direction? How much social cost do Mexicans have to pay before reaching the desired economic development status? Is this chaotic economic situation normal during the first stages of the transition scenario? These are only some of the questions that need an urgent answer in order to alleviate social tensions among the Mexican population.

Researchers, social planners and decision makers are obligated to themselves and future generations to review the impacts derived from this experience with the chosen policies and to evaluate their effectiveness; it is only through this evaluation that these professionals can hope to improve policy applications. Economic analysis can be a powerful and beneficial tool to assist in finding answers to these questions.

Rigorous and systematic economic analysis can lead to a better description of the transition scenario and to a better forecasting of the normative scenario. It can also help to formulate or reformulate policies designed to achieve specific goals as well as to design a better allocation of resources through improved management visibility. The challenge is to build a knowledge based information system appropriate to the use of sophisticated statistical and related methodologies to perform economic analysis with greater accuracy certainty. Since economic analysis is a general approach that can be integrated with other biophysical and sociocultural analysis, the span of problems to which it can be applied ranges from the very simple to the very complex, and from the very small to the very large.

CHAPTER 9
SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND FUTURE DIRECTION

Motivated by the huge expectations generated by the opening of the Mexican economy to the external sector, this study presents a description of the structural change and economic restructuring process experienced by the Mexican economy as a result of the switch in the economic strategy. As a particular case, it focuses attention in the case of the economy of Veracruz given the relative economic importance of this state for the nation's economy. In Veracruz, the economic and institutional change has generated empirical evidence which witnesses the real dimension of a structural adjustment of this magnitude.

The research discussed the meaning of economic globalization, explained why globalization is taking place and discussed how Mexico is being affected by this process. A discussion of issues related to the formation of regional trading blocs around the world provides a basis for the focus on NAFTA and a discussion of its implications for Mexico. The economic background of the Mexican economy from 1940 to the present is examined to help explain the structural change process for Mexico in moving from an import-substitution development strategy toward an export-oriented strategy. A geographic and socio-demographic profile of Veracruz is followed by its economic profile. Trends in critical economic variables during the period, since adoption of the new economic strategy, were

examined here. The role of the government within the context of the export-oriented economic strategy is discussed. The presentation emphasized that economic restructuring like that experienced by Mexico in recent years implied by itself a restructuring of the role of the government and economic policy. Finally, the critical role of economic analysis in policy-making is highlighted followed by development of a conceptual framework to support data collection and analysis.

Conclusions

With the adoption of an export-oriented economic strategy, Mexico initiated its participation into the globalization of the economy. The globalization process is an inevitable trend of increasing interaction in international trade, multinational investment, and the development of science and technology. Technology has been a major driving force behind the globalization of production and related changes in trade and investment patterns. An information technology revolution has greatly increased the flow of information across the planet, making knowledge a more important factor of production than labor, capital, or raw materials. Many developing countries like Mexico are expecting that this new information-based economy has the potential to add a new dimension to economic integration that could accelerate the growth and development process in their economies. Today's shift from industrial production to knowledge production requires newer -and far more sophisticated- skills than last century's migration from the farms to the shop floor in the developed countries. Government and firms also need to find new approaches to the

development challenge which extend investments in industry and infrastructure, to investments in people.

As a part of this strategy, Mexico has become an active sponsor of regional free trade agreements. Indeed, free trade agreements are a fundamental component of Mexico's trade policy in recent years. The signature of these agreements reflects the government's view that the multilateral system presently affords fewer opportunities for advancing liberalization at the pace and depth that Mexico would wish. This strategy, however, has to be weighed carefully against potential social and economic costs. The internal economic restructuring process associated with it generates the bankruptcy of many small and medium sized enterprises as well as increasing input surpluses, mainly labor, which has found serious employment difficulties in other sectors of the economy. To continue sponsoring the conformation of regional trade arrangements without a clear idea of the natural dynamics embodied among the internal components of the economy embody, could lead to social upheaval and the violence which often accompanies it. Presently, the possible need to raise taxes on the middle class as a way of financing government programs, in the face of oil price decline in international markets and following major structural adjustments of recent years, is a challenge of new proportions to Mexico's people and government.

Formerly Mexico's economic strategy to reach higher levels of economic development was under the influence of the import-substitution industry model (ISI) for more than forty years. Many generations grew to maturity under this culture. In fact, most of the Mexican economically active and inactive population in Mexico as well as its domestic business class are, in some sense, "educated" under the principles imposed by this

model. The ISI strategy has left deep roots into Mexican society which now appear as a major obstacle to surpass. The adoption of new economic strategy is challenged every day by the past. The success of the new strategy will depend on how fast Mexicans will be able to abandon the "bad" habits inherited from the past and adapt their culture, tradition, and efforts to the new model. By nature, the external sector is more sensitive to the openness of the economy, but how long is the internal structural change going to last?

The political economy followed by Mexico the last 15 years has required an enormous infrastructural, administrative, and logistic reorganization processes. The state of Veracruz has played a role in this process. In this study, some of the most important geographic and socioeconomic features prevalent in the state of Veracruz were introduced. Infrastructural facilities such as ports, airports, and other communication means were described; some labor indicators were discussed, and some of the most important governmental actions set to encourage this structural transformation were also presented and discussed.

The strategic location of Veracruz and the infrastructural modernization program described in this study are elements expected to play a crucial role in the definition of the new comparative advantage for investment in the state. The ports are all on the routes of the world's leading shipping lines. They provide access to European markets, the gulf and eastern seaboards of the United States, and northeastern Canada. On the other hand, the existing internal transportation network allows transport of industrial inputs and finished products by highway from Veracruz to the leading markets of southern, southeastern, central and northeastern Mexico.

The abandonment of the import-substitution strategy (ISI) and the adoption of an export-oriented economic model (EOI) has resulted in a major shock to the economy of Veracruz. For example, in agriculture, the opening up of markets, price decontrol, and the transformation of land ownership have precipitated a renewed exodus of people from rural areas toward urban centers. In this sense, the primary sector has become an important supplier of labor to the other sectors of the economy, but it is failing as a provider of food for an increasing urban population and as a supplier of raw materials to processing industries.

During the transition, the economic restructuring process has meant the abandonment of the production of some traditional crops and the elimination of some firms. Several crops have shown an increasing trend with respect to the amount of land planted, volume produced and yields obtained; however, improvement in the performance of these crops has not been sufficient to compensate the decreasing relative share of the primary sector to GDP. Livestock, fishing, forestry, and oil and gas extraction, are activities that have shown a critical decline in their relative contribution to the economy of the state. The inappropriate use and exploitation of the natural resources, combined with falling international prices for related commodities, has made these subsectors less and less relevant for the economy of Veracruz.

In the secondary sector, despite an increasing concentration of the labor force in urban areas, the relative share of this sector with respect to GDP and employment in Veracruz has changed little. The lack of investment flows toward industrial activities has limited the expansion of employment possibilities for surplus labor provided from the primary sector. As a consequence, the industrial sector has failed to play the important role

usually assigned to it by the theory of economic development. Nevertheless, some of the most dynamic activities of the Mexican economy such as petrochemicals, cement, breweries, iron and steel, foundry pieces for the automotive industry and aluminum, are located in Veracruz.

The tertiary sector has been by far the most dynamic sector of the Veracruz's economy during the transition. It has become the natural recipient and last resort for much of the labor released by the primary sector. These people are found often in "penny capitalist" activities with little future other than survival. The high concentration of population in urban areas has generated many economic, social and political disturbances. The appearance of tertiary activities, however, like those related to the informal economy, have mitigated, in some sense, the impact of these disturbances on the society. Furthermore, a range of investments in tertiary development service activities such as telecommunications, education and others that impact on the knowledge base can create both important employment multipliers and enhance potential productivity of human resources. Nevertheless, the incorporation of Veracruz's economy into the information age and telecommunication revolution is still incipient. Nonetheless, significant advances in this subsector have been appearing in recent years. The promotional efforts being made by the government and the private sector in tourism services have provided an unprecedented dynamism to this sector.

The adoption of an export-oriented economic strategy as the economic growth driving force in Mexico implied the dismantling of many of the reforms and institutions emanating from the revolution. Indeed, the required economic and political restructuring

necessary to make this economic strategy feasible demanded a set of internal reforms which, in practice, would transform the old institutional framework toward a new, "more appropriate," institutional environment. In this sense, at the end of 1991, the last remnants of the land reform program of the revolution was weakened, if not eradicated; public enterprises were sold to the private sector; a further reduction of the limited welfare provisions and a "fire sale" of public assets were implemented, among other measures. Important changes have been taking place in the conceptualization and functionality of the state and government. An economically active state supported by a strong federal government and a one-party political system apparently is no longer the fashion in Mexico. The new orientation gives the state a role of "guidance" of the economic process, with major responsibility only on those considered as "strategic areas;" the government is now viewed as an agent of economic security. Into this new redefinition, a new federalism and economic decentralization are strategic actions which should stimulate economic growth at the regional and local level.

In this market oriented economic strategy, market forces are primarily responsible for generating economic growth; however, the government has an important role to play in helping to generate socio-economic capabilities and to accelerate the process of balanced and sustained economic development. Its contributions in the generation and creation of externalities favorable to the performance of the strategy could make the difference and represent the success or failure of this strategy.

The redefinition of this new institutional environment into the state and government, as well as this set of new relationships between the government and the market are tasks that

are going to require time and much attention. Internal and external forces will be a constant source of pressure and instability and will be challenging continuously the feasibility of this strategy. A state such as Veracruz with its diversity and linkages to global markets and global society must be recognized as important in the entire process of redefinition and transition to a more open Mexican economy. There are potential development areas which offer attractive investment opportunities for knowledgeable businessmen. Expansion of these opportunities and the knowledge to a majority of Mexico's citizenry is a challenge. As local and state institutions become more actively and successfully involved, the revolution of the twenty first century may exceed that of the early twenty century. In real terms this must occur at all levels.

Evaluation and monitoring of an economic strategy like the one implemented by Mexico in the last fifteen years demand attention. The set of economic and political reforms implemented are generating important flows of information about the economic restructuring of the nation which is not presently subject to measurement, collection, and analysis, at the same pace that it is being generated. The short-run impacts of the new policies have resulted in very critical challenges and adjustments for Mexican people. Extensive confusion and uncertainty characterize the transition scenario, and a rising skepticism about the real benefits and the effectiveness of this economic strategy to promote economic development, has invaded the mind of many Mexicans. How long is the uncertainty going to last? Is Mexico moving in the right direction? How much social cost do Mexicans have to pay before reaching the desired economic development status? Is this chaotic economic situation normal during the first stages of the transition scenario? These are only some of the

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The performance of this study was challenged frequently by a number of limitations. Among the most important were:

(1) The lack of data. Lagged and/or incomplete time series data as well as nonexistent microeconomic data prohibited the use of quantitative methodologies such as the I-O model to measure inter-regional and intra-regional effects derived from the openness of

the Mexican economy. These constraints are even more limiting for most other modeling approaches.

(2) The lack of time. To perform economic analysis by using any major quantitative technique under the information/data limitations will require extended time and assistant work to collect and process the primary data. While this work is clearly possible and necessary, it was not to be within the time frame available.

Recommendations

Several important ideas emerged at the same time that during this study. In reality, the main aim of this research was to demonstrate that the economic change suffered by Mexico in recent years has affected all sectors of the economy. But the story does not end here, the transition process followed by Mexico toward higher economic development status is still incomplete. The economic restructuring process has not yet provided the expected benefits to the Mexican society by which it was conceived. Until now, empirical evidence shows that the impacts derived of the economic reforms have been costly many of the population. Social costs have been so high and more questions than answers are in the minds of many Mexicans. In this sense, some important recommendations to the Veracruz government are:

(1) To improve the knowledge-base system. That is, to improve the data collection and the data processing system, at the macroeconomic and microeconomic level. A local economic development strategy may be a good technique for stimulating economic

development; however, its implementation and development demand a continuous monitoring and evaluation of the strategy. Only accurate and timely information as well as economic analysis of performance can reduce uncertainty and improve forecasting about the future.

(2) The disaggregation of the tertiary sector. The current structure of the tertiary sector underestimates productivity of some service activities which are highly productive, such as education and training, telecommunication, research and development, and banking, among others; and overestimate others which are less productive activities such as those included in the informal economy. Nevertheless, the knowledge-based information revolution characterizing current times has become the driving force for the long wave of economic growth. Its contribution to economic development results crucial possibly equaling those of land, labor and capital. In this sense, the development of information and communication systems represents a solid strategy not only for strengthening the information collection and analysis system but for sponsoring economic development in the country.

(3) To generate conditions that stimulate business growth and development. Business is the heart of economic development in market oriented economies. All businesses originate from a sense of opportunity to serve or gain. If businesses do not find favorable economic conditions to grow in one place they will move to other places, regions or countries, or in the worst case, they will postpone their implementation.

(4) To encourage joint educational, training, and research programs between private firms and educational and research institutions. In a market economy, education, training, research and development, are important elements of factor creation. They become more

relevant when firms share some responsibilities for factor creation such as funding, monitoring, and evaluation. In this sense, a potential strategic alliances is related to building networks where private firms, the government, universities and research institutes, and other sectors of the economy, have a role to play.

Future Direction

As an instigating study for further research, this work was written with a high motivational spirit. In practice it only shows how the Mexican economy appears as a fertile field to perform economic analysis. Indeed, after the tremendous dislocation experienced by the Mexican economy as a result of the recent economic reforms, everything is research matter. A market oriented economy requires a well organized data system to support economic analysis and decision making at the firm and household levels. In this sense, some important actions oriented to future direction are:

(1) To establish the guidelines for a data collection and processing system not only at the macroeconomic but also at the microeconomic level. The idea is to design a statistical system which allows for economic analysis at the national, regional, and local levels.

(2) The transition scenario followed by the Mexican economy is providing the basis for essential information regarding how people are reacting to the economic changes. It is time to conduct research which seeks to evaluate the impact of these economic reforms on consumption, poverty, employment, migration, intra-household dynamics, health and

nutrition, among many indicators, and to suggest ways of making the policies more effective and the transitions less painful for many segments of the population.

(3) In order to guarantee major levels of certainty and accuracy of the local economic development strategy it is very important to start building the bases for the utilization of more sophisticated methodologies which support economic analyses.

(4) Parallel to the information system building, a new learning process should be built as well. Indeed, shifting government responsibility down to states and local units challenges leaders at the medium and lower levels. This challenge is cognitive and demands that learning take on new meaning for those leaders. They are not told what to do anymore. They need to be responsive locally. At the federal government something similar should occur. Federal government has a new learning responsibility to meet. That is, it can not assume homogeneity but must serve and respond to the regional, state, and local conditions. The aggregation up of knowledge and a grass roots learning process as opposed to the old aggregate power based downward focused approach will be required to start planning the new Mexican economic development ... It is a kind of learning which should be individual (decision-maker), social and organizational at the community level.

APPENDIX A
DESCRIPTION OF THE MEXICAN SYSTEM OF GOVERNMENT

The Mexican constitution, proclaimed on February 5, 1917, prescribes a federal republic consisting of thirty one states and a federal district. In this sense, the Mexican Government is structured by a federal government, a state government, and a municipal government. In the case of the Federal District the government structure differs little wit the state, it has a governor and instead of municipalities there are political delegations where the head of each delegation is appointed directly by the governor.

Federal Government

The following brief description of the Mexican government follows the terms of the Mexican Constitution. A chart describes the structure of the Mexican government (Figure A-1). The federal government is responsible for governing the entire nation. In pursuing this purpose it is divided into executive, legislative, and judicial branches (Article 49).

Executive branch

The Presidency is the paramount institution, not only of the Mexican state, but of the entire Mexican political system (Article 80). The president is directly elected by a simple majority of registered voters in the thirty one states and the Federal District. Mexicans living abroad are not allowed to vote as absentees in any election. The president holds the formal

titles of chief of the state, head of government, and commander in chief of the armed forces. The presidential term is six years, commonly known as the *sexenio*. A president can never be reelected, and there is no vice president (Article 83).

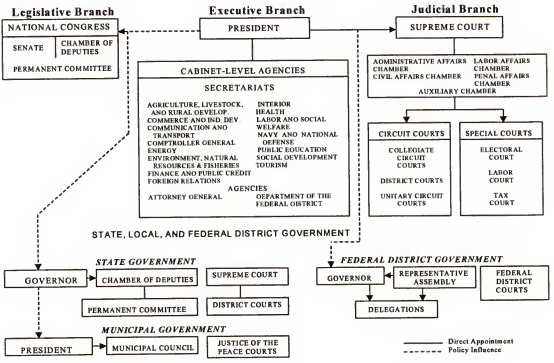

Figure A.1. Structure of the Mexican Government, 1998.
Adapted from Brás (1997), p. 240.

Among the president's prerogatives in legislative matters, he or she may freely appoint and dismiss cabinet officials and almost all employees of the executive branch. Subject to traditionally routine ratification by the Senate, the president appoints ambassadors, consuls general, and magistrates of the Supreme Court (Article 89). Presidential appointment authority also extends downward through the federal bureaucracy to a wide assortment of mid-level offices in the secretariats, other cabinet-level agencies,

semiautonomous agencies, and parastatal[1] enterprises. This extensive appointment authority provides a formidable source of patronage for incoming administrations and has been an important factor in ensuring the regular, orderly turnover in office of competing elite factions within the official party (Bráss, 1998)

Despite the nominally federal character of the Mexican state, the president has historically played a decisive role in the selection and removal of state governors, all of whom, until 1991, were members of the PRI. Presidential power influence has reached in several cases to the selection and removal of municipal presidents in certain "important" municipalities. The president confers broad powers on cabinet secretaries. There has been a hierarchy of influence among the different cabinet posts, and the power of a minister or secretary varies, depending on the priorities set by a particular president as well as the resources available at that time. Traditionally the secretary of interior has been an influential figure and often has been chosen as the candidate to succeed the president.

The executive implements bills passed by the legislature, either in whole or by item. Although a veto may be overridden, there is no constitutional way in which the president may be forced to sign a bill into law. In addition, executive-sponsored bills submitted to the Congress take precedence over other business, and the constitution gives the president broad authority to issue basic rules (*reglamentos*). These basic rules have the same legal force as laws and are the source of most statutory regulations (Fraction I, Article 89).

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[1] A parastatal is a corporation wholly or partially government-owned and managed. Corporate directors general are appointed by the president of Mexico. Although ostensibly managed semiautonomously, boards of directors are subject to the political guidelines of the government.

One of the unique features of the Mexican presidency has been the process of presidential succession. Since the 1930s, Mexico's PRI presidents have enjoyed the right to personally name their successor. The prerogative of choosing one's successor has allowed outgoing presidents to select individuals who embody either change or continuity with past policies. The current president has decided to not continue with this tradition of selecting the PRI successor to the presidency. He has said that beginning with the elections of 2000, the PRI's presidential candidate will be selected by a nominating convention, similar to that followed by the other major parties.

Legislative branch

The legislative branch of the Mexican government consists of a bicameral congress divided into an upper chamber, or Senate, and a lower chamber, or Chamber of Deputies (Article 50). Both chambers are responsible for the discussion and approval of legislation and the ratification of high-level presidential appointments. In theory, the power of introducing bills is shared with the executive, although in practice the executive initiates about 90 percent of all legislation. The congress holds two ordinary sessions per year. A permanent committee, consisting of thirty-seven members (eighteen senators and nineteen deputies), assumes legislative responsibilities during congressional recesses. The president may call for extraordinary sessions of congress to deal with important legislation (Articles 63-70).

The power of the congress includes the right to pass laws, impose taxes, declare war, approve the national budget, approve or reject treaties and conventions made with foreign countries, and ratify diplomatic appointments (Article 73). The senate addresses all matters

concerning foreign policy, approves international agreements, and confirms presidential appointments (Article 76). The Chamber of Deputies addresses all matters pertaining to the government's budget and public expenditures (Article 72). In cases of impeachment, the Chamber of Deputies has the power to prosecute, and the Senate acts as the jury. In some instances, both chambers share certain powers, such as establishing committees to discuss particular government issues and question government officials. The deputies have the power to appoint a provisional president (Article 84). In the event of impeachment, the two chambers are convened jointly as a General Congress. Each legislative chamber has a number of committees that study and recommend bills. If there is a disagreement between the chambers, a joint committee is appointed to draft a compromise version.

Judicial branch

The judicial branch of the Mexican government is divided into federal and state systems. Mexico's highest court is the Supreme Court of Justice, located in Mexico City. It consists of twenty-one magistrates and five auxiliary judges, all appointed by the president and confirmed by the Senate or the Permanent Committee. The Supreme Court of Justice may meet in joint session or in separate chambers, depending on the type of case before it. The high court is divided into four chambers, each with five justices. These are the Penal affairs Chamber, Administrative Affairs Chamber, Civil Affairs Chamber, and Labor Affairs Chamber. A fifth chamber, the Auxiliary Chamber is responsible for the overload of the four regular chambers (see Figure A-1). Court rulings of both the whole, or plenary, court and the separate chambers are decided on the basis of majority opinion. Rulings by the separate chambers may be overturned by the full court.

There are three levels of federal courts under the Supreme Court of Justice; twelve Collegiate Circuit Courts, each with three magistrates; nine Unitary Circuit Courts, each with six magistrates; and sixty-eight District Courts, each with one judge. Federal judges for the lower courts are appointed by the Supreme Court of Justice. The Collegiate Circuit Courts deal with the protection of individual rights, most commonly hearing cases where an individual seeks a writ of *amparo*, a category of legal protection that safeguards individual civil liberties and property rights. The Unitary Circuit Courts also handles appeals cases.

Given that the Mexican legal system is based on Spanish civil law, and this law is based upon strict adherence to legal codes and minimal jurisprudence, the Supreme Court of justice generally displays greater independence in relation to the president than does the legislature, often deciding against the executive in *amparo* cases. In this sense, the most powerful juridical instrument is the writ to *amparo*, which can be invoked against acts by any government official, including the president of Mexico.

State Government

Mexico is divided into thirty-one states and a Federal District. Each state has its own constitution, modeled on the national charter, with the right to legislate and levy taxes other than interstate customs duties. Following the federal organization at the national level, state governments also have executive, legislative, and judicial branches. An organizational chart of the Veracruz government is presented in Figure A-2.

The state executive branch is headed by a governor, who is directly elected by simple majority vote for a six-year term, and, like the president, may not be reelected. Replicating

the pattern of executive dominance at the national level, most policy-making authority at the state level has historically resided in the governor. He or she may appoint and dismiss cabinet officials and almost all employees of the executive branch.

The state legislature is unicameral, consisting of a single Chamber of Deputies that meets in two ordinary sessions per year, with extended periods and extraordinary sessions when needed. Deputies are elected to serve three-year terms and may not be immediately reelected. Legislative bills may be introduced by the deputies, the state governor, the state Supreme Court of Justice, or by any municipality within the state.

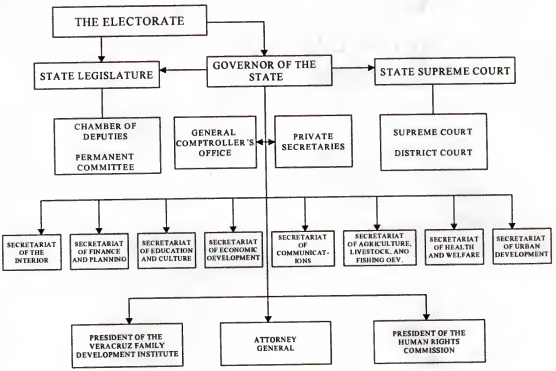

Figure A-2 Structure of the State of Veracruz Government, 1998.

The state judicial branch follows a similar pattern to that of the national government. It is headed by a Supreme Court of Justice, courts of first instance, and justices of the peace or polices judges (Article 95). Justices of the Supreme Court are appointed by the governor with the approval of the state legislature. The Supreme Court magistrates, in turn, appoint all lower state court judges (Article 98).

Municipal Government

The basic unit of Mexican government is the municipality[2] (*municipio*). According to the Free Municipality Organic Law (1997) the state of Veracruz has currently 210 municipalities. The municipal government is headed by a municipal president and a municipal council (*ayuntamiento*) and there is no intermediate authority between the municipal government and the stage government. Municipal presidents are elected for three-year terms and may not showed themselves. However, reelection at another time is possible at this government level. Article 115 of the Mexican Constitution proclaims the autonomy of municipal governments according to the principle of the free municipality. This Article also authorizes municipalities to collect property taxes and user fees, however municipalities have historically lacked the means to do so, relying mainly on transfers from higher levels of government for approximately 80 percent of their revenues.

The municipal government is responsible for a variety of public services, including water and sewerage; street lighting; cleaning and maintenance; public safety and traffic;

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[2]In Mexico the term "municipality" is equivalent to the term "county" used in the United States.

supervision of slaughterhouses; and the maintenance of parks, gardens, and cemeteries. According to the Article 114 of the Political Constitution of the State of Veracruz, municipalities are also free to assist state and federal governments in the provision of elementary education, emergency fire and medical services, environmental protection, and the maintenance of historical landmarks.

Law Enforcement

A number of federal, state, and local police and law enforcement organizations exist to provide for internal security.

Federal judicial police (FJP)

The major law enforcement organization in Mexico is the FJP, which is controlled by the attorney general (see Figure A-1). The foremost activity of the FJP is carrying out investigations and, making apprehensions related to drug trafficking. Espionage, arms trafficking, and bank robberies also fall under its purview. The FJP also serves as the government's liaison with the International Criminal Police Organization (better known as Interpol). The jurisdiction of the FJP encompasses the entire nation. However, for control purposes, its jurisdiction is divided into thirteen zones with fifty-two smaller detachment headquarters (cite). Under the coordination of the local federal prosecutor, each zone is headed by a second command of the FJP, who in turn directs the group chiefs in the outline areas. Individuals arrested by the FJP are placed at the disposition of the local federal prosecutor.

Although it remains one of the smaller law enforcement agencies, the FJP was expanded in 1990 and given interagency coordinating functions in the battle against narcotics.

The protection and transit directorate (PDT)

The PDT is the principal Mexico City police force. It consists of some 29,000 officers organized into thirty-three precincts. It is the largest law enforcement organization in Mexico. This corporation is responsible to preserve the public order on the city and the traffic order on the streets. In this sense, the PDT handles minor civil disturbances and traffic infractions. Actually, there exists a sense of insecurity prevailing among many citizens because of the lack of confidence in the police and the fear of police misbehavior and crime. It is common to hear among Mexico City residents that they should be more concerned and careful with the police rather with robbers and criminals. There have been serious attempts by the federal government to correct this problem. However, one of the most important obstacles to the solution of this problem is that the Federal District police are poorly paid, thus their incomes are supplemented by extorting payments from the civil society. Until this problem is corrected from its roots, Mexico City will continue ranked as one of the most dangerous cities in the world.

Law enforcement in the state of Veracruz

A number of smaller law enforcement bodies exist at the state and local level. Each of the thirty-one states and the Federal District has its own judicial police. In Veracruz this corporation is known as the State Judicial Police (SJP). The SJP are under the direction of the state's governor. The distinction between crimes investigated by the state and Federal

Judicial Police is not always clear and in some cases overlaps. Most offenses come under the responsibility of the state authorities. Drug dealing, crimes against the government, and offenses involving several jurisdictions are the responsibility of the federal police. In most instances, arrests can be made only on authority of a judicial warrant, with the exception of suspects caught in the act of committing crimes.

Cities and municipalities have their own preventive and municipal police forces, which are responsible for handling minor civil disturbances and traffic infractions. Both state and municipal forces operate from precinct stations.

In the state also operates the Federal Highway Police. This federal corporation works on federally designated highways and is responsible to investigate traffic accidents, illegal traffic trade, etc. Highway Police work in coordination with state police and are assisted by military personnel on national holidays.

Immigration officers, directed by the Mexican Immigration Service under the Secretariat of Government, have the right to detain suspected undocumented aliens and, under certain conditions, to deport them without formal deportation proceedings. Custom officers, controlled by the Secretariat of Finance and Public Credit are deployed at borders and international airports and ports to interdict illegal trade entering Mexico.

The Bank of Mexico and the commercial banking system, operate their own security division. The commercial and industrial security system is also part of this security division.

A number of unofficial paramilitary groups incorporating various police officials as well as members of the civil society, have existed in some states of the country. These groups are formed to deal with rural and urban guerrillas and illegal groups. The problem

with these groups is that they usually use illegal tactics to destroy guerrilla movements. For example, in Acteal, a rural indigenous town located in the state of Chiapas, one of these groups was responsible for the assassination of more than sixty people on December 1997. Among these assassinated were women and children, on December 1997. Some of the members of this paramilitary group were from indigenous population.

The government as well as the civil society and some non-governmental organizations (NGO), have repeatedly denounced abuses and corruption by the Federal Judicial Police and other police forces. numerous reforms have been announced, personnel shifted, and codes of procedure adopted, nevertheless the problem persists. Allegations of policy brutality have declined, but torture, wrongful arrests, and involvement in drug trafficking have not been eliminated. It appears that these problems are so deeply rooted in the police agencies that virtual elimination requires more radical medicine.

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BIOGRAPHICAL SKETCH

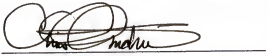
Rey Acosta was born in Palmas de Abajo, Veracruz, Mexico on October 28, 1956 to Camila Barradas and Adolfo Acosta. He grew up in a small town where horses, donkeys, dogs, and cows were his main company. He began his employment as a farm worker when he was six years old. He studied his primary and middle school in his home town. He moved to Puebla for his high school studies, where he spent two years. He received a bachelor's degree in economics from Facultad de Economia, Universidad Veracruzana in 1982. He enrolled at the Colegio de Posgraduados in Montecillos, Estado de Mexico, in 1987 and graduated in 1988 with a Master of Science degree.

He worked for two years with the Instituto Nacional de Investigaciones sobre Recursos Bioticos (INIREB) in Xalapa, Veracruz. Since January 1985, he has been a faculty member at the Universidad Veracruzana, where he has taught microeconomic theory, project evaluation, and agricultural economics. He also served as dean of the business, statistics, and computer science area at the Universidad Veracruzana. He initiated his Ph.D. program at the University of Florida in food and resource economics in the Fall of 1994.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Thomas H. Spreen, Chair
Professor of Food and Resource Economics

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Chris O. Andrew
Professor of Food and Resource Economics

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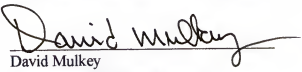

David Mulkey
Professor of Food and Resource Economics

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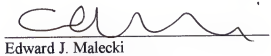

Edward J. Malecki
Professor of Geography

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Terry McCoy
Professor of Latin American Studies

This dissertation was submitted to the Graduate Faculty of the College of Agriculture and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosopy.

December, 1998

Dean, College of Agriculture

Dean, Graduate School